How Marley Co. Concreted a 320-Ft Hyperbolic Tower...Page 78

SEPTEMBER, 1961
PRICE $1.00

Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION

Tandem Push-Loading Keeps Scraper Fleets on the Go...84

Form Segments Rotate As Crews Cast A 'Flying Saucer'...116

In New Mexico, a big digging wheel chews into the bank of a borrow pit to get fill for Abiquiu Dam. The machine can spit out [illegible] at a maximum rate of [illegible] cu yd per [illegible]

COMPLETE CONTENTS, PAGE 4

FUEL FOR THE JETS OF O'HARE

Two 20-foot two-leg bridle slings of 1⅛" 6 x 19 Yellow Strand handle these tanks.

S. J. Reynolds Co. brings the Jet Age to O'Hare Field on Yellow Strand Slings

It took 21 stratalite jet fuel tanks, each holding 50,000 gallons, to slake the thirst of the big planes of the new air age at O'Hare Field, Chicago. The S. J. Reynolds Company of Cicero, Illinois, called on Yellow Strand safety slings to carry the burden of placing the 27-ton tanks in position. The reason – dependability. Yellow Strand slings are modern as the jet age – made better, built stronger to keep pace with modern needs. Whatever your sling need, call your Yellow Strand representative.

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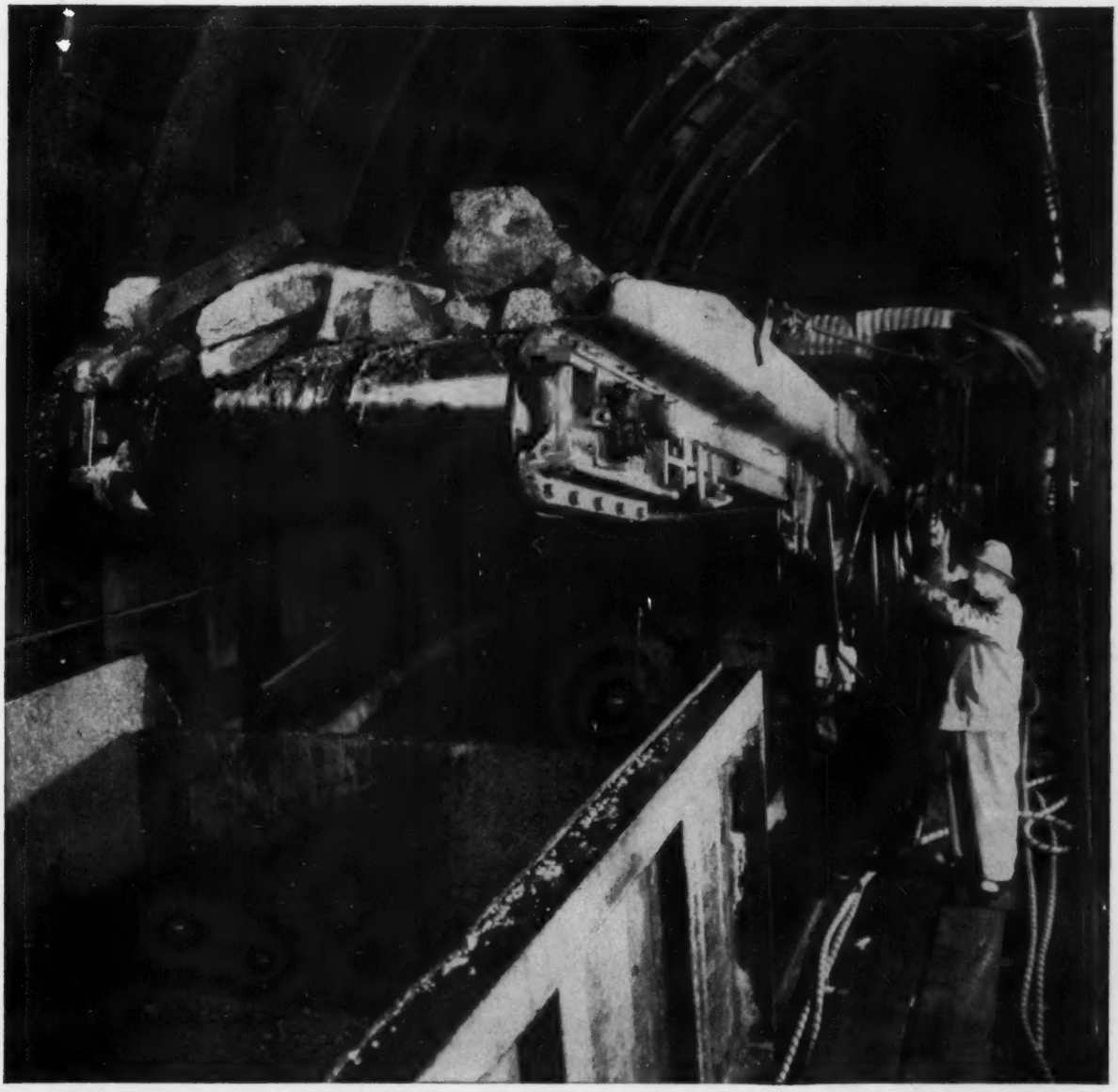

Rubber copes with a colossal bore

THIS is part of a water diversion tunnel bored 11 miles through a California mountain as part of the Trinity Dam project.

As the big hunks of rock were blasted out, they were scooped up onto a conveyor belt that dumped them into rail cars. But the constant smash of rock on rubber wore belts out fast. They were averaging only 15,000 cubic yards.

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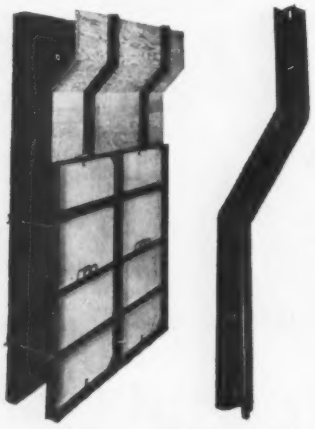

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SEPTEMBER, 1961

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VOLUME 43 NUMBER 9

CONSTRUCTION METHODS AND EQUIPMENT, September 1961, Established in 1919. Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), Founder.

Available only by paid subscription. Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders forwarded to address shown in box below. Publisher reserves the right to refuse non-qualified subscriptions.

United States subscription rate for individuals in the field of publication $2 per year, single copies $1; foreign $15 per year, payable in advance.

Editorial, Executive, Circulation, and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N.Y. Telephone: Longacre 4-3000. Teletype: TWX N.Y. 1-1636. Cable Address: McGRAWHILL, New York.

Printed at Garden City, L.I., N.Y.; second-class mail postage paid at New York, N.Y., and at additional mailin goffices. Title ® registered at U. S. Patent Office. © Copyrighted 1961, McGraw-Hill Publishing Company Inc. Quotations on bulk reprints of articles available on request. All rights reserved, including the right to reproduce the contents of this publication, either in whole or in part.

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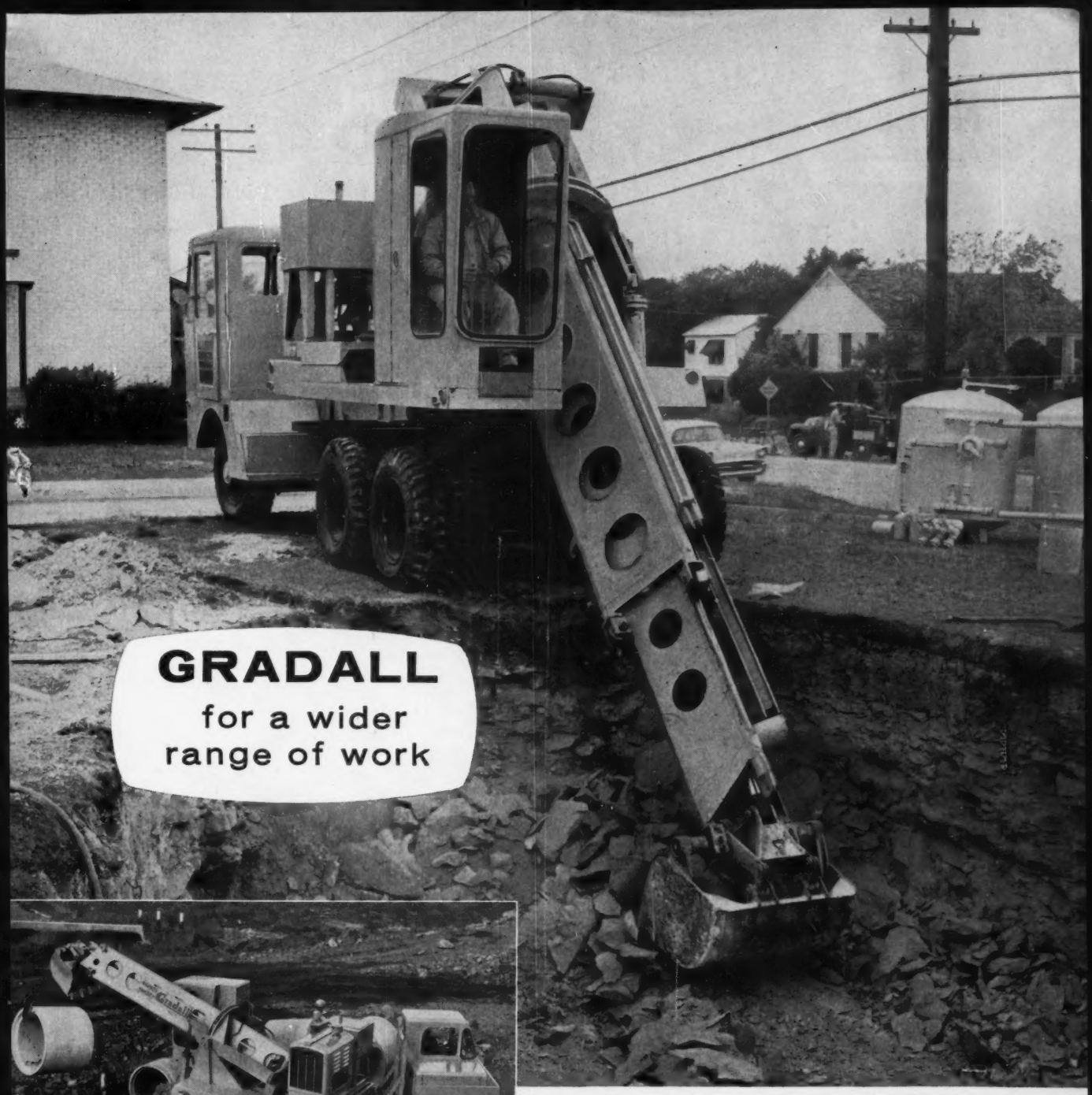
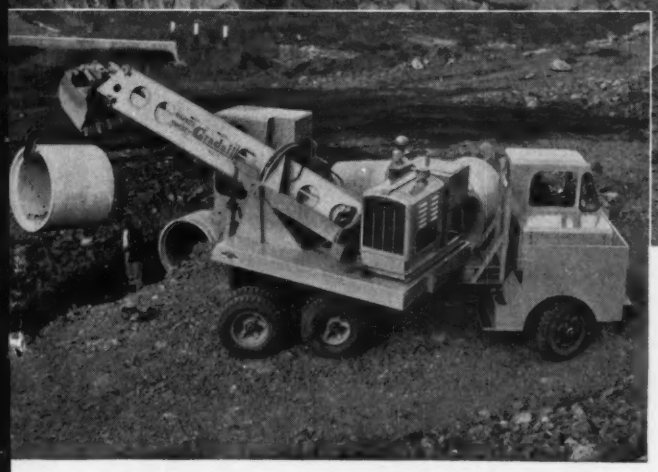
SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N.Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Fulfillment Manager, CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., N.Y. 36, N.Y.





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world's largest line of hydraulic construction and excavating equipment... dealers in all principal cities.

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ON THE COVER

The Abiquiu Project, a Corps of Engineers flood control unit on the Rio Chama, calls for moving 10½-million yd of earth. Mittry Construction Co. of Los Angeles is digging a lot of it with a Model 2000 wheel excavator. Its 20-ft cutterhead carries six 1¼-yd buckets, turns at 10 rpm. Material is conveyed to a two-way spout for loading Euclid wagons continuously. Two GM 12V-71 diesels power the rig, manufactured by Mechanical Excavators, Los Angeles.

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NEXT MONTH

To make room for a section of eight-lane Interstate Route 93 near Boston, the contractor must relocate and straighten a river. Two dredges excavate 1½ million yd of unusable salt water peat for this phase of the project. To obtain 3 million yd of fill material for the roadbed along the river, the contractor is excavating a hill in New Hampshire and moving it to Massachusetts by train. A dual unloading installation near the job site transfers the material from the rail cars to dump trucks that place the fill. A wheel dozer spreads and compacts it along the river banks.

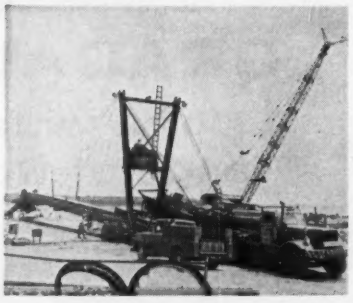
Photo Credits: Above, top right, Hans Van Der AA; 66 bottom, Bechtel; 71 top, Port of New York Authority.

SEPTEMBER, 1961

Pay Dirt in This Issue

Canadians Cast, Place Giant Concrete Girders . . . 91

To cast and place 176-ft girders weighing 180 tons each, the contractor developed several unique handling rigs, including a 360-ft girder launcher weighing 240 tons.



Shop-Built Conveyor Is Jack of All Trades . . . 102

Excuse its boarding-house reach, but this trailer-mounted conveyor has only 5½ hr between tides to place rip rap and pour pile and deck concrete for a dock project.

Tower Crane Tackles A Big Demolition Job . . . 126

In its role as a materials handler on a wrecking job a climbing crane is climbing down from the top as a crew takes apart an old 25-story parking garage in downtown Chicago.

Contractor Pours a 320-Ft-High Hyperbolic Tower..... 78
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Give YOUR operator the shovel that gets the job done!

THERE'S a reason why you find Northwest machines on the tough jobs! It is the record they have made on thousands of jobs, large or small, for getting the job done!

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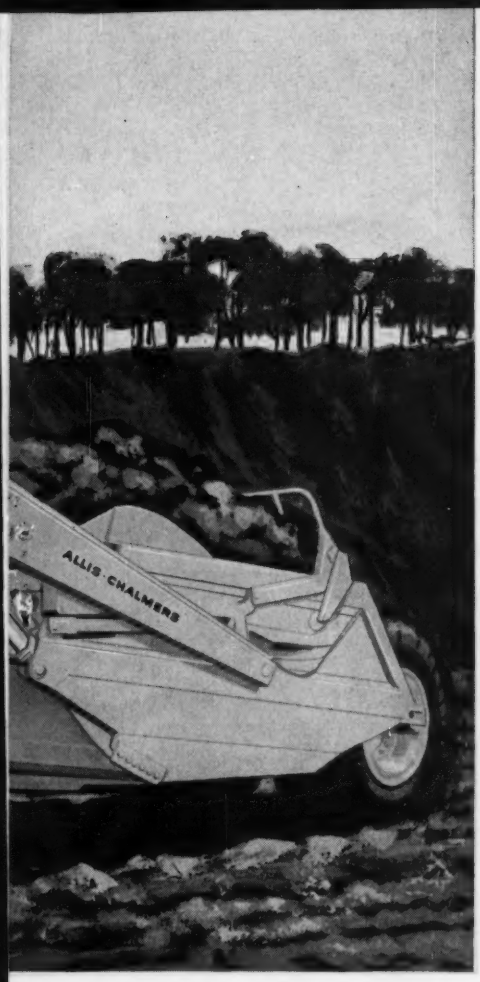
18-yd—230-hp

TS-360 30-yd—340-hp

TS-160 11-yd—155-hp



ONLY ALLIS-CHALMERS ALL-HYDRAULIC MOTOR SCRAPERS give you full-power advantages in every phase of the cycle

. . . plus important new improvements to increase production, provide new strength and life. Now you get even more dirt-hustling horsepower from Allis-Chalmers. Every model offers you full-power steering, loading, spreading, and traction. New improved design and tougher metals bring extra strength and durability to transmissions, differentials, and hitch assemblies. Independent apron control on the TS-360 speeds up loading and spreading in unusually dry, free-flowing materials.

Allis-Chalmers low-maintenance, all-hydraulic design, backed up by major performance and durability achievements, lets you challenge today's toughest earth-moving jobs confidently. See the '61 line in time to *step up your "bid-power" with full-power features.*

Select the size that fits your jobs best from the world's only complete line of *full-power*, all-hydraulic motor scrapers. From ditching to dam building, there's an Allis-Chalmers motor scraper with the right combination of job-proved features to match any earth-moving situation. Prove it to yourself with a comparative demonstration before you bid your next job. *Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.*

NEW! 13% more capacity in the TS-160 . . .

The new TS-160 now carries 8.5 struck yards . . . 13% more than previous models. The TS-160 is the only machine in its class backed up with "big" scraper performance features. The "160" also gives you the widest cutting surface for easier loading, smoother finishing . . . the highest apron opening for fast, clean spreading. See the 155-hp TS-160 today. It'll work alone, or fit right into your largest earth-moving spread.

STEP UP YOUR **POWER** with

- **P**erformance
- **O**perator comfort
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POWER FOR A GROWING WORLD

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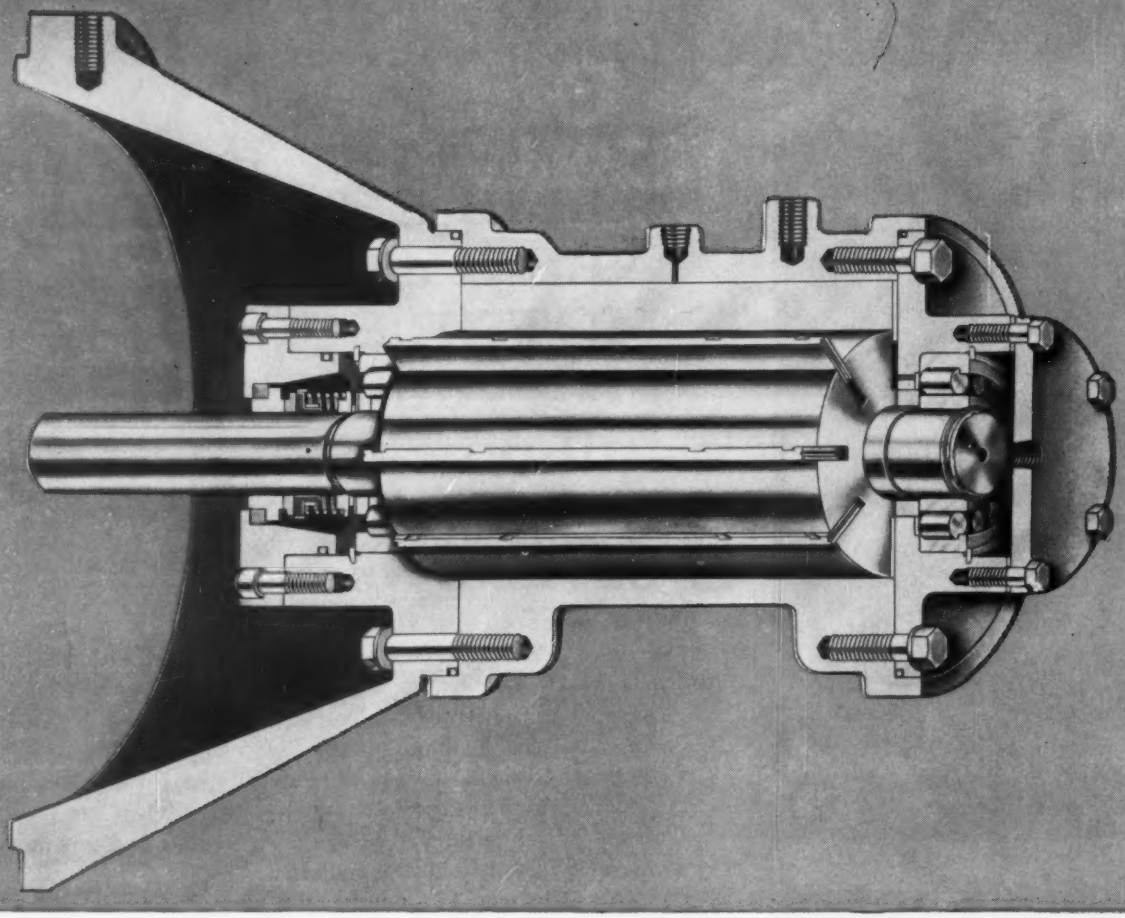
WORTHINGTON COMPRESSOR NEWS:



NEW MONO-ROTOR INTRODUCED IN 85′, 125′ AND 250′ MODELS

Now Worthington introduces the new Mono-Rotor Blue Brute compressor—a significant step ahead in improving compressor performance. The Mono-Rotor introduction follows six full years of development and field testing. It can be ordered immediately in the most commonly used sizes.

The major feature of the Mono-Rotor design is its extremely simple, dependable construction. The Mono-Rotor is built with just one stage . . . just one rotor . . . just two bearings . . . no gears . . . oil pump. It is simpler in construction than any two stage compressor or any screw type compressor. This simple construction is the basis of its high degree of reliability.

How reliable is the Mono-Rotor? Its reliability is so great that Worthington has quadrupled its warranty period. The standard warranty agreement has been extended from the usual 90 days to one full year. Worthington is the first compressor manufacturer supplying the construction industry to do so.

What makes the new Mono-Rotor design so successful? It is the new Worthington-developed rotor-to-cylinder sealing. For over ten years the industry has attempted to solve this problem for larger compressor sizes. Two-stage construction was the solution until Worthington developed new methods of oil distribution within the cylinder. Now an efficient, dependable air supply is available in just one stage—one rotor construction.

The new Worthington Mono-Rotor units have other benefits, too. They are 20% lighter in weight and are designed for improved towing and tracking. The third wheel is standard equipment for easier handling on the job. There is an engine-saving clutch and many other features.

The Mono-Rotor Blue Brute can now be ordered in the 85′, 125′ and 250′ sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "Compressors." Or write Worthington Corporation, Dept. 60-37, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.

NEW 125′ MONO-ROTOR COMPRESSOR

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OFF-THE-HIGHWAY TEAM CUTS DOWNTIME

1. **Firestone Giant Tires** are ruggedly built to reduce downtime. The SUPER ROCK GRIP (WB) is a good example. With exclusive Firestone Rubber-X and Shock-Fortified cord bodies, this hard-working giant *keeps* your equipment on the move—lets you roll up more yardage with less downtime because it's the toughest off-the-highway tire Firestone has ever built!

2. **Firestone Giant Tire Service** puts a Tire Specialist right on the job to help you eliminate difficulties caused by excessive speeds, heat, cutting, breakage, or *any other* tire problem. In most cases, he's able to spot tire trouble *before* it starts, and save you money by cutting downtime.

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Always Specify Firestone Tires When Ordering New Equipment.

Firestone

FIRST IN OFF-THE-HIGHWAY TIRE NEEDS

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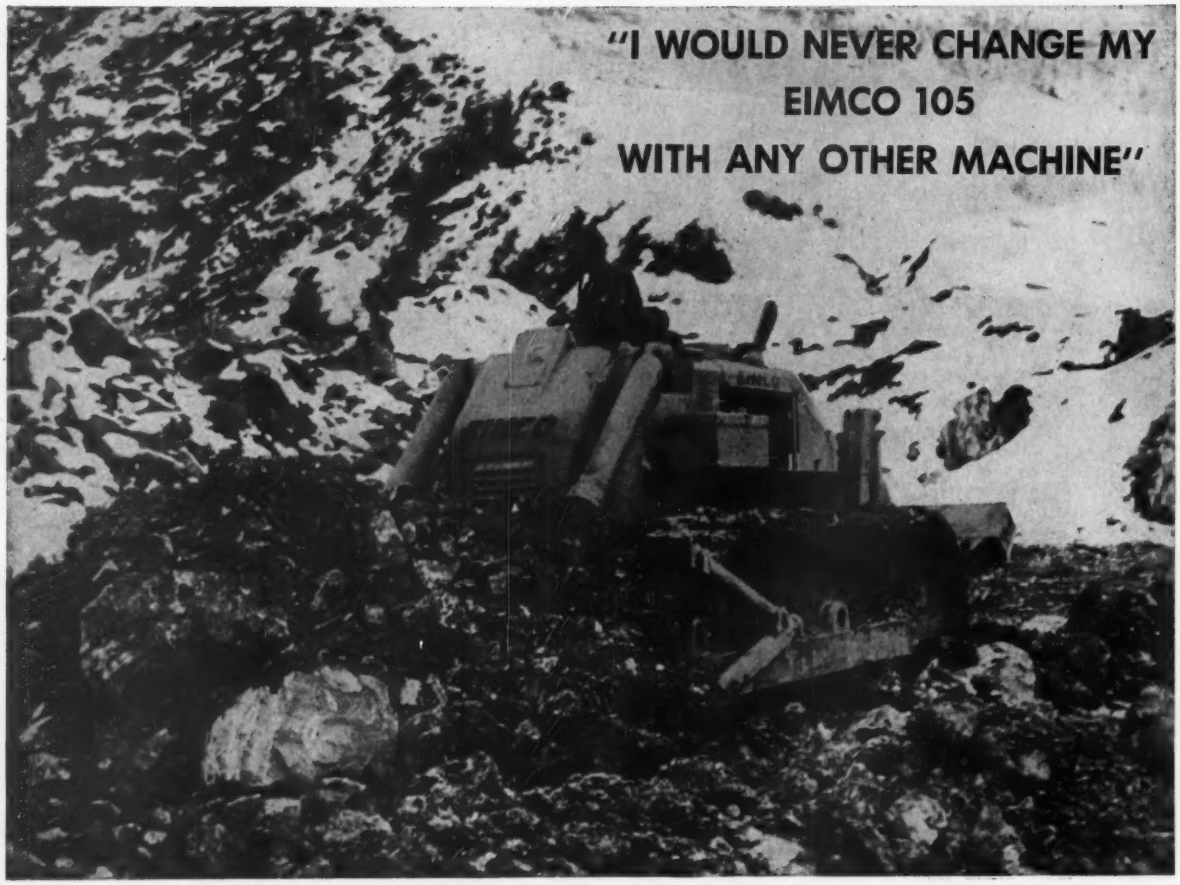

"If I need to buy another tractor, no doubt it will be an Eimco,"

says Owner Cassinis of Impresa Cassinis, Italy.

The contracting firm of Impresa Cassinis bought an Eimco 105 Bulldozer in early 1958. It was immediately put to work in constructing the mountain super highway between Ceva and Savona and has worked steadily in the tough job of opening new roads in rock since that date.

Listen to what Mr. Cassinis has to say about his Eimco 105:
"The unique features of this machine have always allowed me to outperform my competitors, who were using other tractors. My 105 has been able to work on steep grades, on soft soils and mud, where other machines were not even able to maneuver and where several times I had to tow them out of difficult conditions!*

"Furthermore, the downtime and the maintenance cost of the machine have been definitely lower than any other type of machine; the Eimco 105 will be of the greatest help to me in reducing costs per yard on the new job I have recently contracted, on the Turin-Milan super highway.

As we have said before . . . our best ads are not written . . . they are out on the toughest jobs, outproducing, outperforming and outlasting any other machine in their class. Get all the facts before you buy, and you'll choose an Eimco! Write for the location of your nearest Eimco Dealer or Branch and for Bulletin LM-1167.

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Circle 10 on Reader Service Card

Construction News From Washington

Washington, D.C.
September, 1961

Defense Buildup Gets Top Priority

The Berlin crisis has caused a sharp change in the legislative outlook in Washington and it will have its effect on federally-sponsored construction. Congress sidetracked pending domestic bills to act on the $3.5-billion increase in defense funds that the President asked for. With that sum added to the government's budget for the current year, portending a deficit of $6 billion or more, the lawmakers became even more reluctant than before to approve new construction programs that call for cash outlays.

Large-scale federal aid for public schools and college classrooms apparently is slated to be held over until next year. The Administration made an attempt at a compromise to move the House-blocked aid bill for school construction and teacher's salaries. But Congressional leaders rebuffed the effort and brought out instead the popular school aid bill for federally affected areas. Construction will get part of the $300 million in this year's measure.

New Emphasis On Civil Defense

President Kennedy's defense buildup effort will not boost construction immediately. Most of the Defense Dept. increase of $3.5 billion goes to beef up the armed forces. But $200 million to make a fresh start on civil defense, now assigned to the Defense Dept., can lay the ground work for a large shelter construction program.

Key to the new approach is a systematic $93-million survey of existing potential shelter space that could be immediately utilized or quickly improved for community-type shelters. The Army Corps of Engineers, with the Navy Bureau of Yards and Docks and the General Services Administration, put more than 100 people from district offices through a four-week training course at Fort Belvoir.

Local architectural and engineering firms hired by the district offices will conduct the survey. Graduates of the Fort Belvoir course are returning to their home offices to engage the professional firms and train the personnel for the survey.

Other items in the new civil defense budget provide funds to test construction techniques for expanding, reinforcing and ventilating shelter space in existing federal buildings, and to plan and build shelters in new structures. Out of the Defense Dept. first-year effort may come an Administration decision to undertake a substantial civil defense program involving community-type shelters. Such a program, experts agree, would cost from $1 billion to $3 billion a year for the duration of the cold war.

continued on next page

Space Agency To Build Facilities

Speedup in space flight efforts produced $245 million of new construction money for the National Aeronautics and Space Administration. The construction appropriation includes $60 million for a new manned space flight center, $43 million for Saturn launching facilities at Cape Canaveral, $28 million for a new test launching installation, and $15 million to start construction of a national nuclear rocket development center at Jackass Flats, Nevada. The rest of the money will go into construction contracts to build test facilities, tracking stations, and other support facilities at various locations.

Sites for the manned space flight center and the new launching complex were still to be determined when the money was appropriated last month. Houston, Tex., however, looked like the first choice among sites considered for the flight center.

Public Buildings Program Grows

No cuts were made in this year's appropriation for public buildings. Congress voted $212 million for construction of 25 federal structures scattered across the the country. The General Services Administration and its Public Buildings Service plan to invite bids on these projects within the current fiscal year.

Funds were voted for buildings that spread from Los Angeles, (two structures costing $27 million and $2 million), to Derby Line, Vt., where a border station will cost an estimated $267,000. The biggest is a $59-million building in New York City, followed by a $31 million structure in Chicago. Major jobs for other cities include Washington, D. C., $24 million; Pittsburgh, $20 million; Denver, $18 million; and Cincinnati, $17 million.

At the same time, Congress made sure that there would be no letdown in the public buildings program in future years. Public Works committees of the House and Senate moved 33 proposed projects on to the approved list, making them eligible now for detailed design. Construction should follow in a year or two.

Administration Pushes Desalting Plants

Congress will give President Kennedy a good part, if not all, of the saline water conversion program funds requested by the Administration. The Interior Department's office of saline water has asked approval of a 4-yr program involving more than $100 million of construction: $82.6 million for demonstration plants ($52.9 million of it for construction); $33.3 million in grants to municipalities to build conversion plants, and $25 million in loans for plant construction.

Firm plans for 13 demonstration plants using ten different processes were outlined in the request. Construction dollars for these plants, and for municipal plants as well, would be spread around the country. More than 200 cities have expressed interest in conversion plants, and 91 are seriously seeking such plants.

GOODYEAR

Q: What do Goodyear Earthmover Rims have that no others have?

A: MORE times FOUR

1. MORE rims on the job: More tons are hauled on—more earth-moving equipment rides on Goodyear rims than on any other kind. Result: You reap the benefits of the widest, soundest experience in rim design, manufacture and use.

2. MORE kinds of rims: Maximum rim performance stems from proper specification. Goodyear makes the *only complete line* of earthmover rims. Result: The choice that permits you to get exactly the right rim for the job.

3. MORE rim engineering help: Goodyear has more engineers designing *and selling* rims than any other company. And they know tires, too. Result: The help you need in choosing the right rim for top performance—longer tire life.

4. MORE rim "firsts": The first *true* earthmover rim, the first 5° rim, the first tubeless rim—in fact, every major earthmover rim advance was made by Goodyear. Result: The very latest in rim design and manufacture at work, for you.

What better reasons for choosing Goodyear as your rim supplier? Only these: The desire and ability to design and build any rim that may be needed for *tomorrow's* earth-moving equipment. No matter what your rim needs or plans, you'll find it pays to call on Goodyear. See your local rim distributor, or write: Goodyear, Metal Products Division, Akron 16, Ohio.

Lots of good things come from

GOODYEAR

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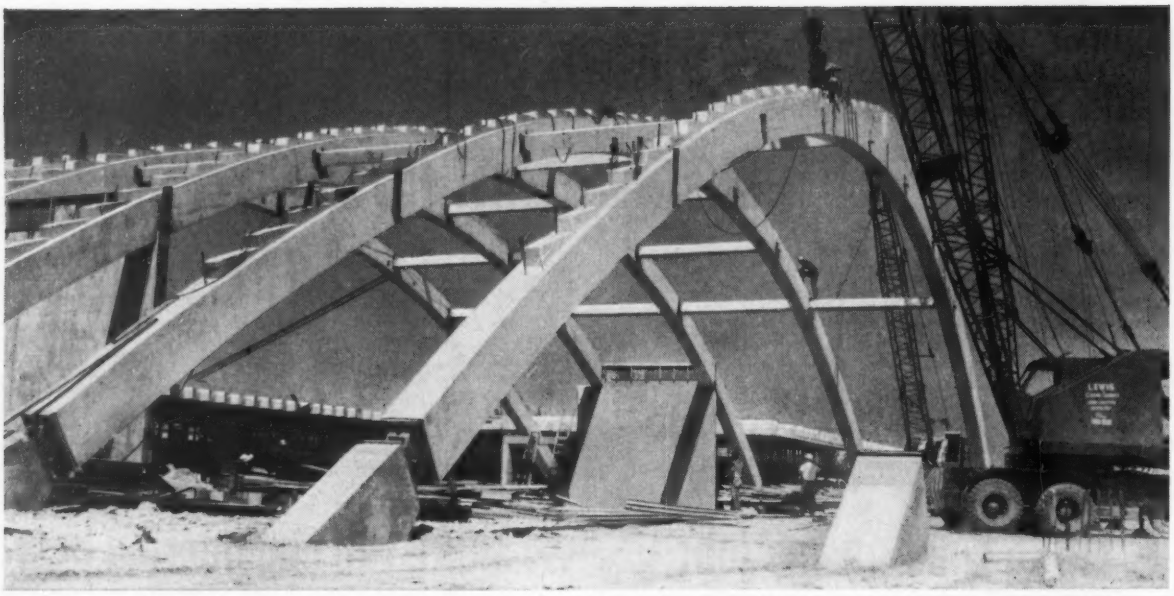


Each of the arches spans 160′ and is spaced 16′ center to center. The arch skeleton is braced by precast lateral members with welded connections. Gym floor space is 12,000 sq. ft., and there is a 10′ wide covered walkway on each side. Note "steps" and projecting dowels cast into arches for securing roof panels.

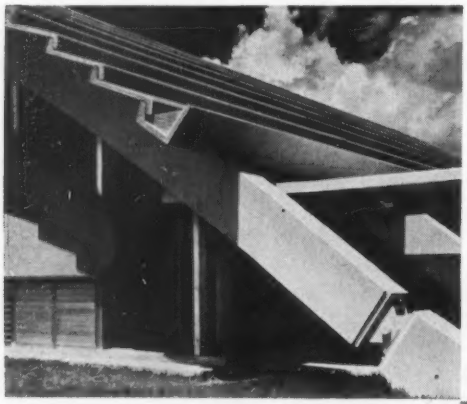
UNUSUAL PRECAST CONCRETE DESIGN FOR GYM ROOF

Modern precast concrete was imaginatively used to achieve an outstanding combination of function and beauty in Miami Central High's new gymnasium.

The three-hinged arches were cast on a concrete form at Precast Corporation's plant for minimum tolerances and maximum uniformity. In place, they rise directly from buttress footings supported on precast piling. Unusual precast roof slabs span the 16′ between arches. In addition to upward and downward legs for a shingle-type fit, the slabs also have a unique facing of glazed tile.

Lehigh Early Strength Cement was used for peak efficiency in the production of all precast units. In precasting the arches, for example, its use made it possible to turn out two arch-halves a week from a single form. Lehigh Portland Cement Company, Allentown, Pa.

Closeup shows shape and ceramic tile finish of roof slabs. Each panel spans 16′, is 2″ thick, and 4′ wide including upward and downward legs. Special units at bottom act as rain gutter. Aqua colored high-glaze tile was applied by casting it integrally with the slabs as a form liner. Tiles were later grouted and given a coat of silicone waterproofing.



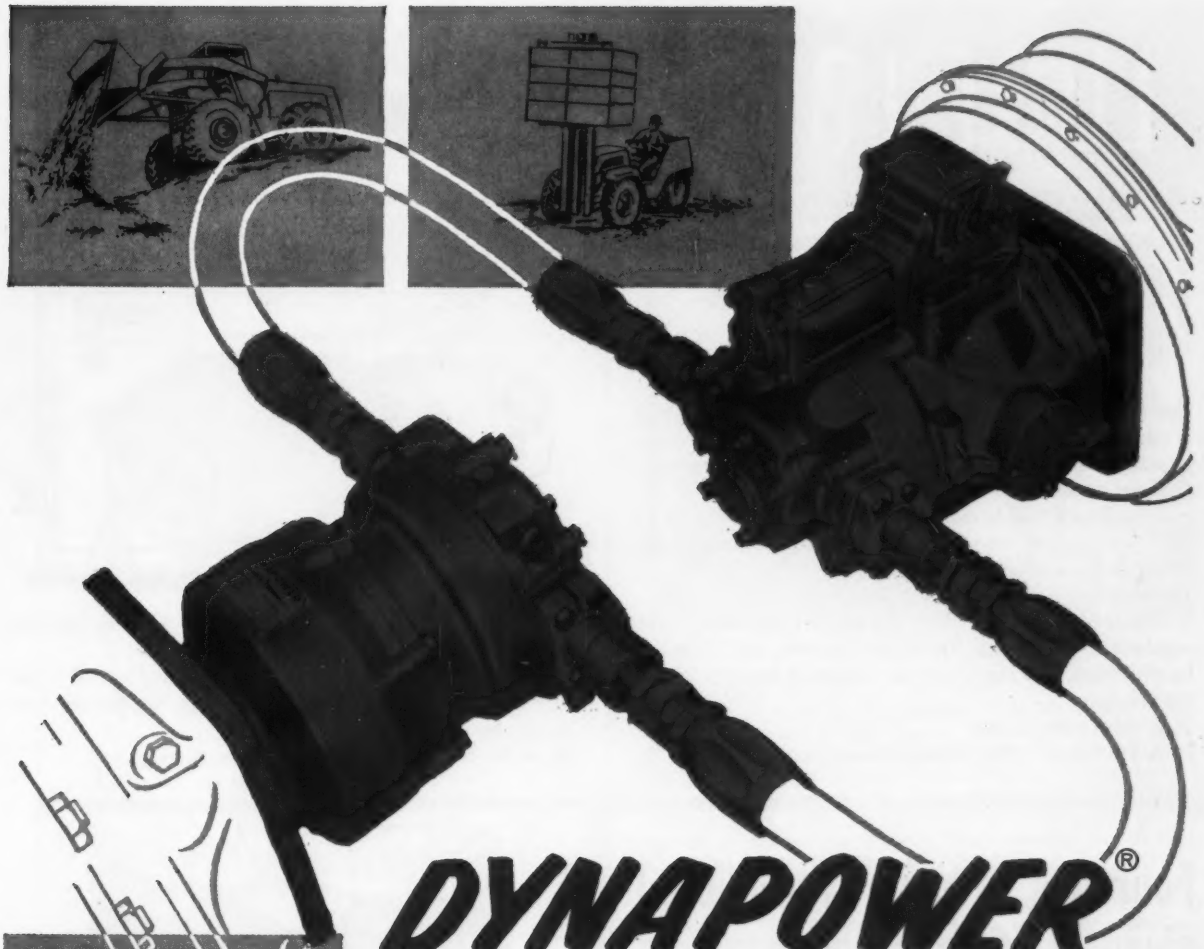
Miami Central High School Gymnasium

Architects: Polevitzky, Johnson & Associates
Structural Engineers: H. J. Ross Associates
Contractor: Thompson-Polizzi Construction Co.
Fabrication/Erection of Precast Concrete: Precast Corp.

All of Miami, Florida

View of completed gym speaks for its grace and practicality. Roof slabs were attached only by welds to dowels in the arches, solving problems involving thermal expansion and contraction. Then joints were covered with sheet copper strips set in a caulking compound.

LEHIGH CEMENTS

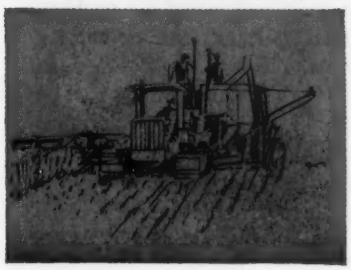


DYNAPOWER®

HYDROSTATIC TRANSMISSION SYSTEMS*

=SELLING POWER

in tomorrow's *OFF-ROAD VEHICLE* market



You can judge the pull of that SELLING POWER yourself. Take the outstanding sales points of your present off-road vehicle and add to them these unique DYNAPOWER benefits: high torque at low rpm; Power Absorption Braking® that eliminates use of service brakes; infinitely variable speeds in either direction without clutches or gear changers; faster, smoother response; and simplified maintenance due to elimination of the drive train.

Then ask yourself, Could any other vehicle compete with one that offers all these? The answer is, No. That's why we say that DYNAPOWER-ed vehicles will dominate tomorrow's market. Be sure you are ready to compete in that market. Be sure you know all there is to know about DYNAPOWER today. Guarantee your own SELLING POWER in the competitive days ahead. Write:

*The DYNAPOWER Hydrostatic Transmission System shown above uses a separate axial piston hydraulic pump and motor to produce torque as required up to 300 lb./ft. The variable pump provides an infinitely variable speed ratio and displaces a maximum of 4.8 cu. in./rev. The transmission is rated at a normal 60 HP but handles peak requirements up to 90 HP.

WATERTOWN DIVISION
THE NEW YORK AIR BRAKE COMPANY

159 STARBUCK AVENUE • WATERTOWN, N.Y.

LUBE LOGIC

New tips for

Don't let storage tank contaminate gasoline

One of the basic essentials of good equipment performance is clean fuel; and the best way to make sure the fuel you use is as clean as the fuel you buy is to keep your own storage facilities up to snuff.

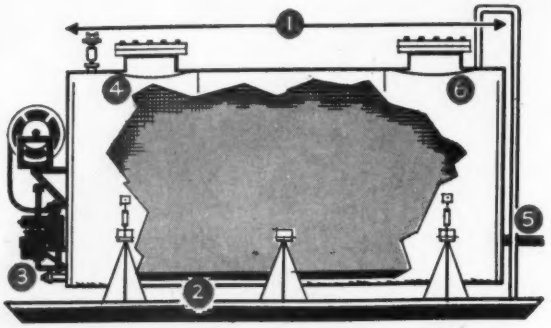
What does it take to make the ideal gasoline storage tank? Here are some of the specifics that Texaco engineers have found to be most important.

The ideal gasoline storage tank has:

1. Plenty of room. Every time you fill a tank you stir up the sediment at the bottom. The bigger the tank, the less it has to be refilled, and the longer the sediment stays settled on the bottom.

2. Welded construction.

3. A 1½" drain valve, located at the lowest point.



4. A large hand hole plate or manhole, to make cleaning easier.

5. A suction line to the gasoline pump located several inches above the tank bottom, to avoid drawing out the sediment and condensate.

6. A fine-mesh strainer over the filler opening.

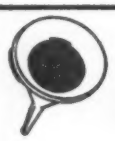
Four tips to keep hydraulic oil clean in storage and handling

Even the best maintenance techniques won't keep your hydraulic equipment on the move if you don't keep the oil clean while it's in storage and while it's being put into the machine. Here are four simple precautions that will assure you of getting nothing but clean, clear oil in the hydraulic system:

1. Store the drums on their sides, indoors if possible, but in any event under some sort of shelter.

2. Before you open a drum, clean the top so that no dirt or water can fall into the oil.

3. Make sure that you use only *clean* hose and containers in transferring the oil from the drum to the equipment.

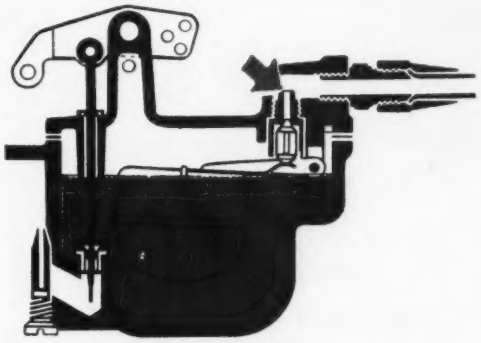


4. Filter the oil as it enters the reservoir on the machine. If the fill pipe on the equipment doesn't have a filter, use a funnel fitted with a 200-mesh screen.

Protect diesel fuel injector with periodic tank drains

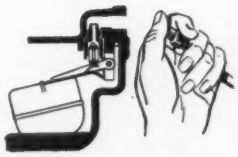
Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a good chance that temperature changes will create enough condensation in the fuel tank on your rig to start rusting in the injectors. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills you save on the fuel injectors.

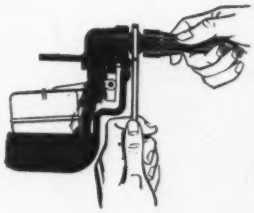
more efficient maintenance



Quick cure for carburetor flooding

Repeated stalling and hard restarting is often caused by a tiny particle of grit, which lodges under the carburetor float needle valve, lets too much gasoline into the carburetor and causes flooding. You can often solve the problem with the following routine: disconnect the fuel line at the carburetor and plug it with a cork, a pencil or anything else that will fit. Then run the engine until you've used up all the fuel in the carburetor. Reconnect the fuel line, crank the engine, and the rush of gasoline into the empty carburetor will often flush the foreign matter out of the needle valve seat. If you have a friend but no cork, have the friend start the engine while you plug the disconnected line with your thumb. Same difference.





1. PLAN FOR PROFIT—Texaco's newest color-and-sound movie. Dramatizes the major savings you can make with the proper investment of less than 1% of your total budget—the amount you spend on lubricants. Film features latest lubrication methods and equipment on a number of contracting projects, demonstrating the Texaco Simplified Lubrication Plan in action.

2. FUNDAMENTALS OF LUBRICATION—a brand new Texaco color slide film. A clear, concise once-over that defines technical terms like "viscosity" and explains specifically what lubrication is and what it does. This down-to-earth discussion will give the lubrication man a new understanding of the importance of lubrication, and a fresh interest in his work. It's supplemented with a manual that covers the same ground in greater detail.

3. LUBRICATION OF EARTHMOVING EQUIPMENT—a new slide film, in color. A concise, easy-to-understand analysis of proper lubrication of engines, wheel bearings, steering, track rollers, crawler treads, hydraulic equipment, wire rope, open and enclosed gears. Supplemented with a manual that covers the whole field of earthmoving equipment lubrication in greater detail.

FOR AN EARLY SHOWING of any one of these films—or all of them—contact your Texaco Contractor Representative *now*.

TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers," little angles, so easy to overlook, where big savings in money and time can be made. If Lube Logic doesn't solve your problem, call your local Texaco Lubrication Engineer. Anytime, all the time, he's your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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TEXACO

Throughout the United States
Canada • Latin America • West Africa

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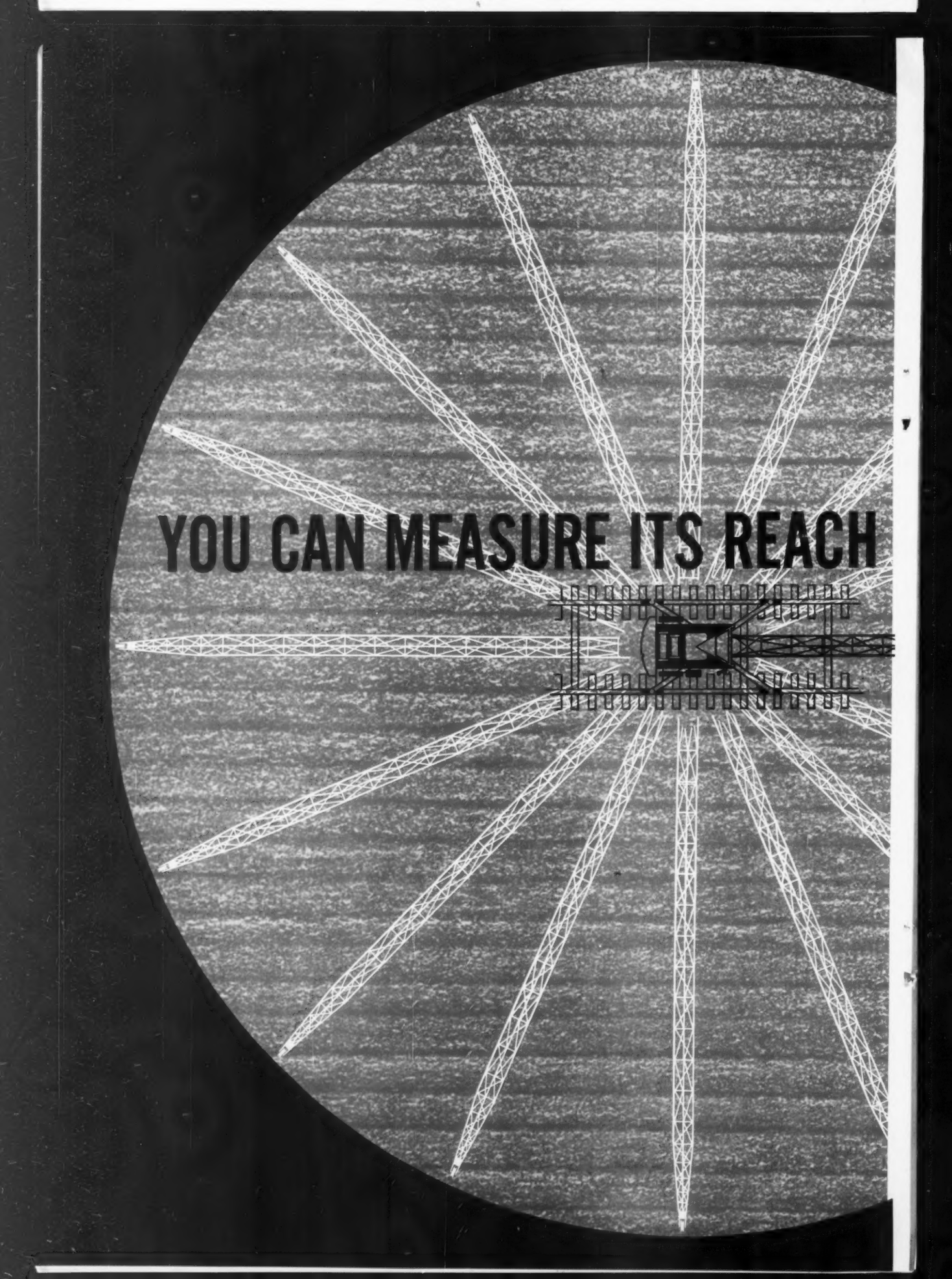
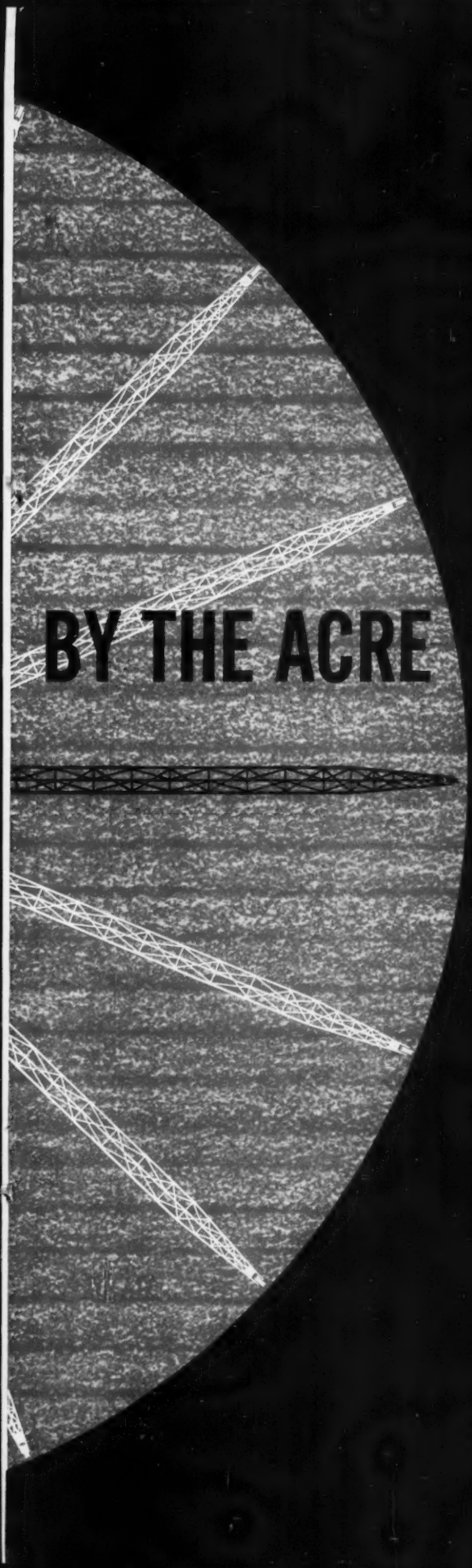

YOU CAN MEASURE ITS REACH



Here you have a helicopter view of the Bucyrus-Erie Mark I-50 Tower Crane. The circle its boom describes at maximum reach covers an area of 47,529 sq. ft. — considerably larger than an acre. Diameter across the circle is 246 ft. You can pick up a load from any spot and deliver it to any spot within this area. No need to rehandle material. Rail mounted, the Mark I-50 lets you pick and propel with the crane's full rated capacity as you hoist and swing and boom up and down.

Another way to measure the size of the Mark I-50 is to compare its productivity with any other tower crane, built *anywhere*. Nothing touches it for speed, capacity, or money-saving ability on large building projects. 5761

See your Bucyrus-Erie distributor or get in touch with Bucyrus-Erie Company, South Milwaukee, Wisconsin.

BUCYRUS ERIE®

World's largest manufacturer of cranes and excavators

MARK I-50

TOWER CRANE

STOW TAMPER TAMPS 4500 SQ. FT. PER HOUR

STOW

The Stow T-18A Tamper packs a profit punch . . . combines vibration with impact to work faster, more efficiently. Compacts granular soil in trenching, backfill, sub-bases, foundations—even black-topping and pavement patching! Here's why:

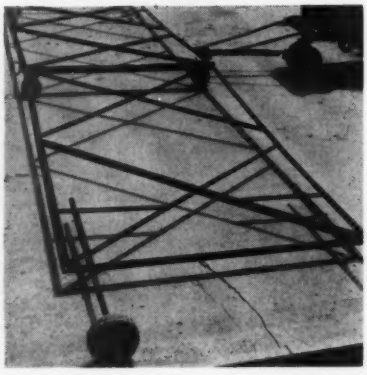
- **WALLOP:** engineered to coordinate engine and vibrator strokes for a 2200 lb. impact—2400 times a minute!
- **SPEED:** self-propelled at up to 50 ft. per minute—4500 sq. ft. per hour!
- **TROUBLE-FREE:** easy-starting Wisconsin engine has fuel pump that operates at any angle!
- **RUGGED DESIGN:** heavy - duty components, plus gas tank mounting under the engine for less wear and tear!

Contact your Stow distributor for an on-the-job demonstration, or mail this coupon for Tamper Bulletin #610-10.

STOW MANUFACTURING CO.
Dept. M-2, 31 Shear St.
Binghamton, New York
Please send me Tamper Bulletin #610-10.
NAME_____ TITLE_____
COMPANY_____
STREET_____
CITY_____ STATE_____

STOW MANUFACTURING CO.
Binghamton, New York
Circle 20 on Reader Service Card

Job Talk...



Job-Built Rig Saws Joints

A Denver subcontractor devised a propene-propelled saw and a rolling templet for sawing longitudinal joints on a 12½-mi section of I170 in Colorado

Truelock Contractors attached two saws to the rubber-tired machine. One cuts the top portion of the slab; the other completes the cut. The rig averages 16 ft of joint per min. A rolling frame made of scrap steel spans the entire width of the 24-ft-wide pavement and guides the sawing machine.

Rig Paves Half the Width of a Street

An Iowa contractor has built a combination screed-spreader that paves half the width of a street—including an integral curb and gutter. Ray Bertelli and Sons of Cedar Rapids devised the rig by modifying a conventional curb and gutter machine. The contractor attached pipe extensions to the basic rig to mount front and back screeds with a strike-off width of 162½ ft.

Winches pull cables attached to the ends of the machine to move it forward. A curb hopper fed by transit-mix trucks distributes the concrete. Both screeds and hopper are equipped with electric vibrators powered by a generator mounted on the machine.

A crew of seven men handle the paving operation. Bertelli averages between 800 to 1,200 sq yd of pavement per day with the rig.

continued on page 25

Important Break-through!

Greatest News Ever in 2-Way Radio!

New "E" Line Puts Quality RCA Radio in Reach of Every Business Man!

New RCA "Efficiency" 2-Way Radio drastically reduces co-channel interference, skip signals and ignition noise—gives you a sharp, clear channel of communication. First of the new "E" Line Radios, this is the finest UHF 2-way radio ever offered by RCA . . . and at *the lowest price ever.*

Combination control panel, speaker and power supply unit mounts in less than 7″ space under dash. No separate control panels or speaker—single compact unit completely eliminates clutter.

Transistorized power supply cuts vehicle battery drain to provide more economical and efficient operation. Operates from 6 or 12 volts—easy power conversion without wire changes, soldering or extra accessories.

Now, you can enjoy the money-making, time-saving advantages of 2-way radio at its best . . . for less! Lease or purchase plans. And RCA service technicians are on hand to keep your equipment operating at its peak. Send for complete information.

The Most Trusted Name in Radio

RADIO CORPORATION OF AMERICA

RADIO CORPORATION OF AMERICA
Telecommunication Center, Dept. Z-203
Meadow Lands, Pa.

☐ Please send literature on the new RCA "E Line" 2-Way Radio for 450 mc band.

☐ Have Communications Specialist call.

NAME_____ TITLE_____

FIRM_____

TYPE OF BUSINESS_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Circle 21 on Reader Service Card

B.F.GOODRICH TIRES MOVE ROCK FILL FOR COUGAR DAM.

Finished dam will tower 485 feet, stretch 1,600 feet, and slope from a base width of 1,500 feet to a crest width of 40 feet.

Six-mile reservoir will provide water resources for flood control, power production and public recreation. $50-million project is scheduled to take four years.

30 TONS OF ROCK CRASH onto B.F.Goodrich Rock Service tires. Tires work two shifts a day on scrapers, bottom dumps, rear dumps, water wagons, graders, rollers and mobile cranes. Yet it's not unusual for tires to be retreaded twice.

CONTINUOUS TIRE INSPECTIONS play a key role in keeping M-C&S' equipment on the go. The B.F.Goodrich Unified Contractors Program helps contractors save on all their rubber products—and protective clothing—requirements. Ask your BFG dealer to show you how this new program can help *you*.

B.F.Goodrich helps move a mountain to build a dam

B.F.GOODRICH ON-THE-SPOT SERVICE helps M-C&S get the most out of equipment. Tire changes seldom take longer than 15 minutes. BFG Servicemobiles carry all the latest power tools, are manned by tire experts.

12-MILLION CUBIC YARDS OF ROCK AND EARTH FILL RIDE TO $50-MILLION COUGAR DAM PROJECT ON B.F.GOODRICH TIRES

They're changing the topography of Oregon's Willamette Valley. Rock quarried from a knob high above the South Fork McKenzie River is taxied down a tortuous road by a fleet of giant earth movers. It will become part of the fill for Cougar Dam, a Corps of Engineers flood control project that will be the largest structure of its type in the Northwest.

Altogether, general contractor Merritt-Chapman & Scott Corp. will move 12-million cubic yards—every one on B.F.Goodrich tires. You'll find B.F.Goodrich Rock Service tires with Cut Protected compound hard at work here. BFG developed this compound for jobs like Cougar Dam, where upwards of 30-ton loads must be carried over hard, rock-surfaced roads. It takes a mighty big boulder to gash this compound, and if it should, there's BFG Flex-Rite Nylon cord construction to withstand the impact (and resist heat blowouts and flex breaks too). No wonder many Rock Service tires at Cougar Dam can be retreaded twice.

B.F.Goodrich on-the-job service plays a key role in keeping M-C&S equipment on the go. All 600 BFG tires are inspected regularly. Tire changes seldom take longer than 15 minutes. There is a BFG tire warehouse and shop less than a mile from the project. A BFG tire record system keeps the contractor informed of costs and helps control inventory.

Supplying contractors with longer-wearing tires and dollar-saving service is an everyday job for B.F.Goodrich. On many projects B.F.Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to talk to your B.F.Goodrich dealer. His know-how can make a big difference in your profit picture. Look him up under Tires in the Yellow Pages. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

Circle 23 on Reader Service Card

ENGINEER'S FIELD REPORT

Even at 30° below zero Eimco Tractors start instantly with Chevron Primer Systems

On the Alaska Highway or high in the Swiss Alps on the Mt. Blanc tunnel project . . . and on highway construction in Korea . . . the Chevron Pressure Primer System eliminates cold-starting problems.

It saves valuable time, assures safe, fast starting in seconds for all internal combustion engines, saves wear on batteries and starting motors in extremely cold climate conditions or after engines have been idle for long periods.

The Eimco Corporation, Salt Lake City, Utah manufactures a line of crawler tractors and loader equipment that meets the highest standards in the industry. This company's insistence on supreme quality performance is one reason why Chevron Pressure Primer Systems are specified for cold weather operation.

CHEVRON STARTING SYSTEMS assure rapid starts in the coldest weather . . . save you time . . . reduce equipment wear. Chevron starting fuels are available in cans, capsules or cartridges for use in marine craft, trucks, tractors, shovels, air compressors or mechanically refrigerated cars.

For free technical help or information about the various Chevron Starting Systems, just call your local representative, or write any company listed below:

CHEVRON STARTING FLUID

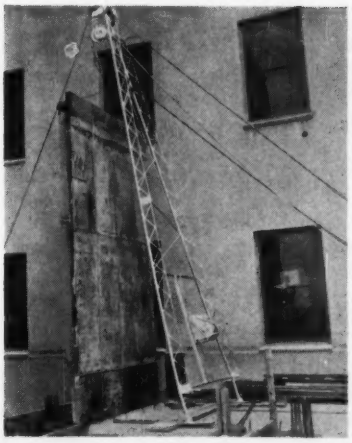
STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • **STANDARD OIL COMPANY OF TEXAS,** El Paso
CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey - Denver, Colorado

TRADEMARK "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

Circle 24 on Reader Service Card

JOB TALK . . .

continued from page 20



A-Frame Erects Ganged Forms

This lightweight A-frame rigged like a gin pole handles erection of ganged forms for the builder of a Phoenix hospital addition. Contractor Gilbert & Dolan built the rig from scrap steel and added a winch for hoisting power

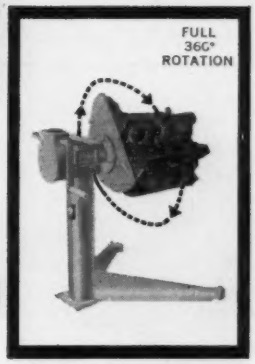
G&D gangs standard Symons 2x6-ft form panels into sections as large as 18x30 ft on this job. Double 2x6 walers spaced on about 8-ft centers hold the panels, which are also backed up by 2x6 fir strongbacks

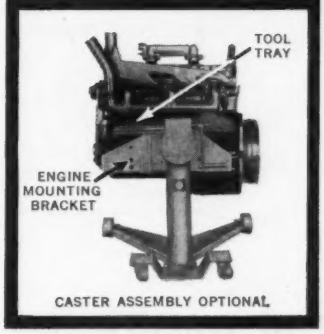
The A-frame easily handles the 1½-ton sections of ganged forms, freeing a large truck crane for other materials handling. The rig rides on slotted wheels over inverted angle-iron rails. It's boom sticks out 10 ft beyond the side of the building. The contractor also plans to use the A-frame with a ⅜-yd bucket to place wall and column concrete.

Oil-Soaked Burlap Cleans Mixer Drums

Tennessee contractor J. B. Michael Co., Inc., keeps the drums of their transit mixers clean with oil-soaked burlap. A pipe at the top of the drum holds the burlap, which hangs down over each side of the drum. As the drum revolves, the heavily soaked burlap removes any concrete adhering to the outside of the drum. Yard superintendent Herbert Johnson uses the gimmick at a prestressing yard that is turning out beams for a bridge in Mississippi.

Top, bottom, sides... all hard to reach engine areas worked easily with new OTC positioning stand





ENGINE WORK DONE FASTER, SAFER, EASIER, FOR BETTER OVERALL SHOP PROFITS

New OTC engine positioning stand is fast and safe to operate—allows mechanic to easily rotate engines through a full 360°.

A self-locking matched worm-and-gear set, with 8" crank, allows engine to be locked in any position. Engines are mounted on stand by means of an adapter bracket which is bolted to stand and engine.

Model No. 1700 weighs only 135 lbs., handles engines weighing up to 1200 lbs. Stand can be bolted to floor, or made mobile with optional caster assembly.

Here is a valuable piece of equipment which speeds up engine service . . . gives you added profit in time saved.

Contact your OTC distributor for more information on this and other time-saving OTC tools.

RESEARCH · ENGINEERING · DEVELOPMENT · OTC

OWATONNA TOOL COMPANY

380 CEDAR STREET, OWATONNA, MINN., CABLE: TOOLCO

Designers and manufacturers of the world's most complete line of Maintenance Tools and Hydraulic Equipment.

PULLERS AND PULLER SETS · HYDRAULIC RAMS AND PUMPS · HYDRAULIC SHOP PRESSES · HAND TOOLS

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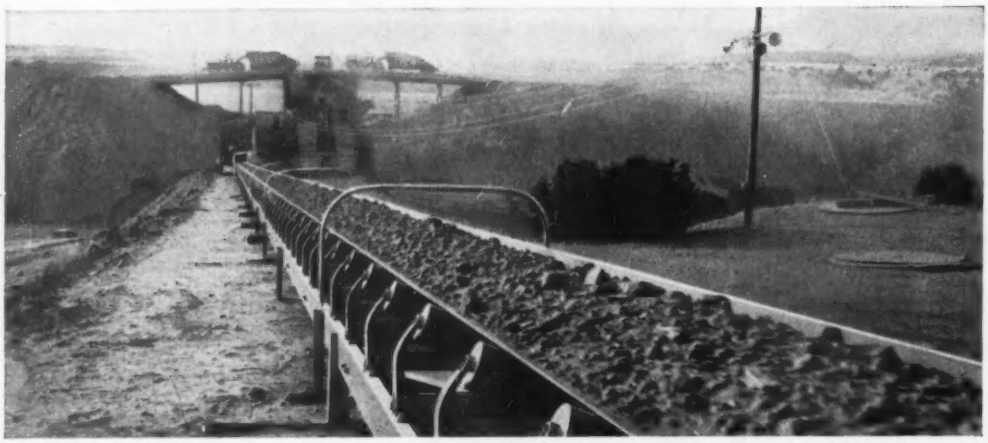
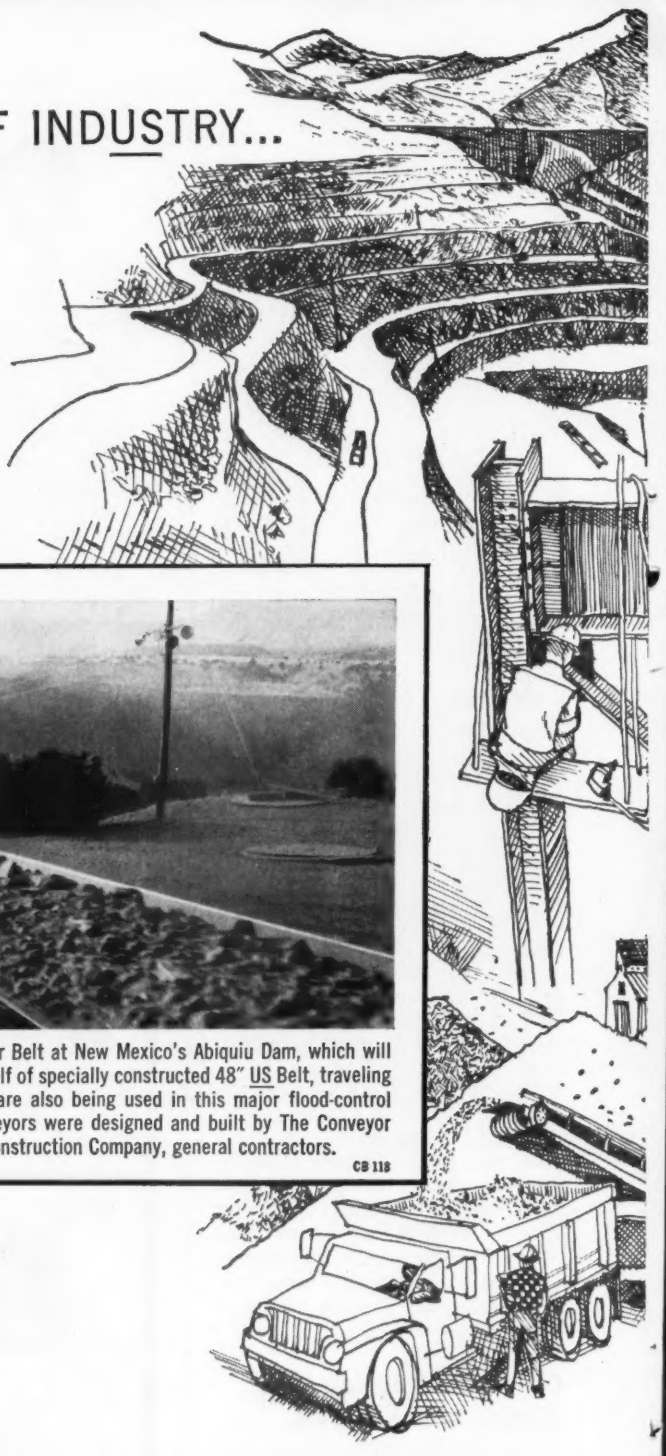
AT THE HEART OF INDUSTRY...



60,000 tons of material a day are being carried by a US Conveyor Belt at New Mexico's Abiquiu Dam, which will be the fourth highest earth-fill dam ever built. More than a mile and a half of specially constructed 48" US Belt, traveling at 800 fpm, is used on this single conveyor. Other, wider US Belts are also being used in this major flood-control project to carry the more than 15,000,000 tons of fill required. Conveyors were designed and built by The Conveyor Company of Los Angeles in conjunction with US engineers for Mittry Construction Company, general contractors.

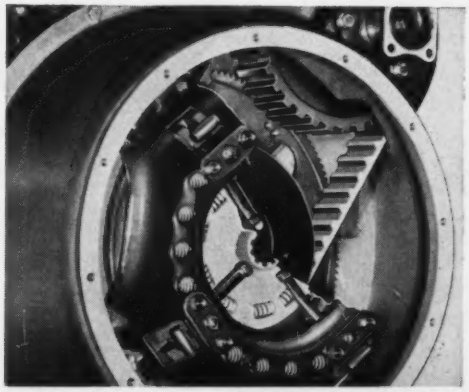
CB 118



Wherever the mining or construction industry operates, you'll find U.S. Rubber products adding their "muscle" to the job...making it easier, more efficient, more profitable. As the world's largest producer of Industrial Rubber Products, US knows the needs of mining and construction men everywhere.

6 U.S. Pilot® Pipes pump 5,000 gallons of water per minute at a Minnesota taconite mine. The pipes lead from a barge pump to two concentrators. Rubber pipes were essential, for during pumping the barge may rise or drop 10 feet, straining hose and connections. Despite its flexibility, this pipe is extremely strong... takes 250 lbs. pressure.

N 110



The revolutionary new flywheel power take-off on Reo's transit-mix truck relies on a U.S. PowerGrip "Timing" Belt for the positive, smooth, direct, and even-flowing power essential to its success. The "Timing" Belt does away with a separate engine or front-end take-off, eliminates the need for lubricants, allows a payload increase of more than 600 lbs. per trip.

TB 106

Now US brings another major development to conveyor belting—the WeatherGard cover. In recent tests this cover was unharmed by 7 times the ozone torture that causes ordinary belt covers to crack and fail. What's more, the WeatherGard cover has much greater resistance to cracking from accelerated aging, has outstanding resistance to abrasion, wear, and weather.

CB 119

For every industrial rubber product need, turn to US. For Conveyor Belts, V-Belts, the original PowerGrip "Timing"® Belt, Flexible Couplings, Mountings, Fenders, Hose and Packings... custom-designed rubber products of every description. Discover why U.S. Rubber has become the largest developer and producer of industrial rubber products in the world. See your U.S. Rubber Distributor or contact US directly at Rockefeller Center, New York 20, N. Y.

WORLD'S LARGEST MANUFACTURER
OF INDUSTRIAL RUBBER PRODUCTS

United States Rubber
MECHANICAL GOODS DIVISION

Circle 27 on Reader Service Card

1 HIGH-SPEED OPERATION
Balanced release levers permit high-speed drives. Lever "throwout" is eliminated for longer bearing life. Patented anti-friction rollers give instant release with minimum pedal pressure.

2 ACCURATE FIT
Close-tolerance drive between cover and pressure plate assures smooth starts. Highly accurate bolt circle fits flat flywheels—accurate outside pilot diameter fits counterbored flywheels.

3 VIBRATION DAMPENER
Coil-spring vibration dampener absorbs vibrations between engine and transmission. Noise, rattle and thrash in the gear train are eliminated for smooth, quiet clutch operation.

ROCKFORD SPRING-LOADED CLUTCH

International model C-130 Dump Truck equipped with Rockford Spring-Loaded Clutch

See us at the Milwaukee S.A.E. Show Sept. 11 to 14

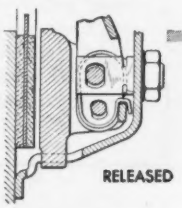
4 HIGH-TORQUE DESIGN
Powerful engagement springs, properly spaced over the facing area, assure maximum driving contact. Compact, low-inertia design prevents gear clashing and delayed shifting.

5 SMOOTH ENGAGEMENTS
Dynamic and static balancing assures you of smooth, enduring clutch performance. Both driving and driven members are balanced to eliminate vibration.

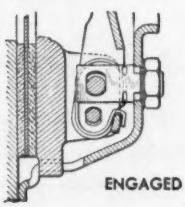
6 HIGH-TEST FACINGS
Using only the highest quality facings, Rockford Clutches give extra-long clutch life, provide cushioned starts, reduce scoring and greatly cut costs of downtime replacement and labor.

7 PERFECT ALIGNMENT
Close-tolerance splined hub assures perfect disc alignment. Through-hardened hub gives long life. Precision manufacturing and rigid quality control eliminate chances for misalignment.

7 Good Reasons Why Idea-Men Count on Rockford Reliability



RELEASED



ENGAGED

Above are seven reasons why more and more design men specify Rockford Spring-Loaded Clutches. Equally important, ROCKFORD RELIABILITY is due to 63 years of creative engineering, precision manufacturing and rigid quality control. Rockford offers complete design engineering service at no cost or obligation. You're backed by a worldwide service network. Write today for complete details on ROCKFORD RELIABILITY.

ROCKFORD CLUTCH

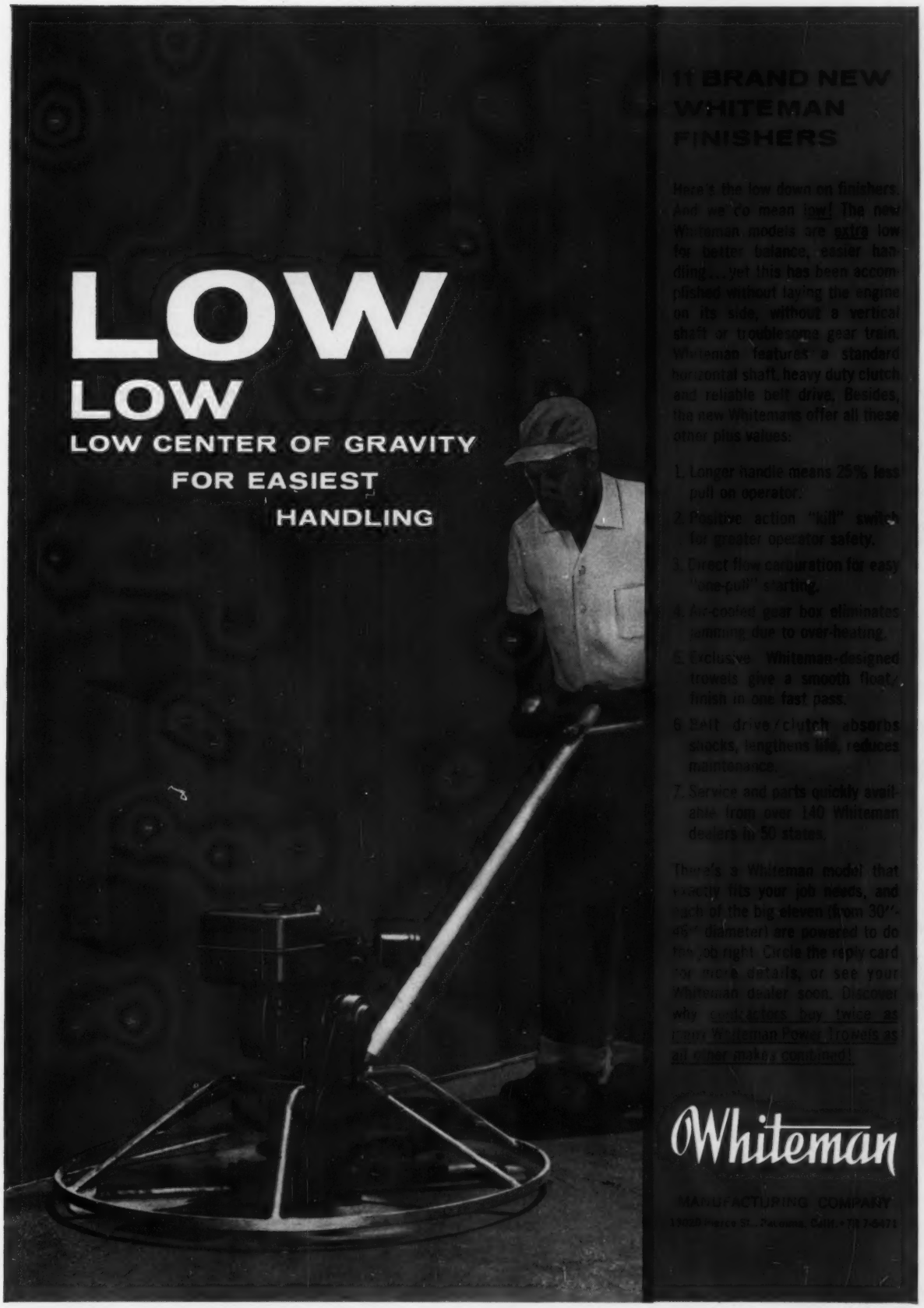
1207 WINDSOR ROAD, ROCKFORD, ILLINOIS

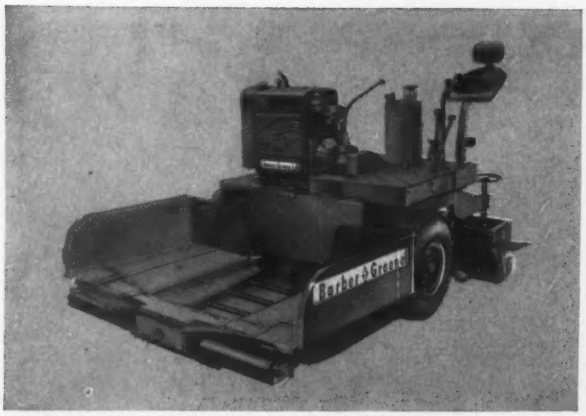
Export Sales Borg-Warner International • 36 So. Wabash, Chicago, Ill.

ROCKFORD B-W CLUTCH

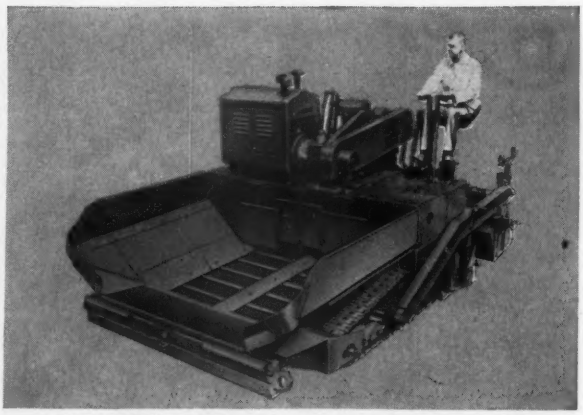
DIVISION OF BORG-WARNER

Circle 28 on Reader Service Card

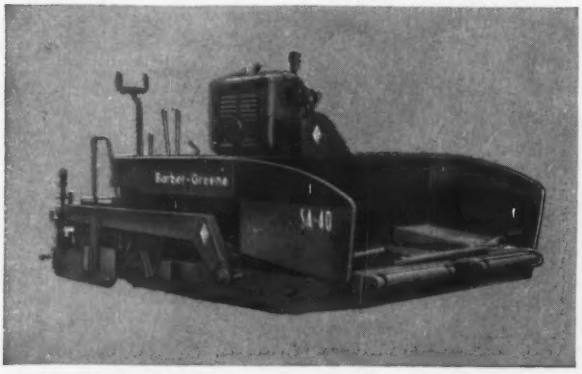

LOW
LOW
LOW CENTER OF GRAVITY
FOR EASIEST
HANDLING
11 BRAND NEW WHITEMAN FINISHERS
Here's the low down on finishers. And we do mean low! The new Whiteman models are extra low for better balance, easier handling... yet this has been accomplished without laying the engine on its side, without a vertical shaft or troublesome gear train. Whiteman features a standard horizontal shaft, heavy duty clutch and reliable belt drive. Besides, the new Whitemans offer all these other plus values:
1. Longer handle means 25% less pull on operator.
2. Positive action "kill" switch for greater operator safety.
3. Direct flow carburation for easy "one-pull" starting.
4. Air-cooled gear box eliminates jamming due to over-heating.
5. Exclusive Whiteman-designed trowels give a smooth float finish in one fast pass.
6. Belt drive/clutch absorbs shocks, lengthens life, reduces maintenance.
7. Service and parts quickly available from over 140 Whiteman dealers in 50 states.
There's a Whiteman model that exactly fits your job needs, and each of the big eleven (from 30"-46" diameter) are powered to do the job right. Circle the reply card for more details, or see your Whiteman dealer soon. Discover why smart actors buy twice as many Whiteman Power Trowels as all other makes combined!
Whiteman
MANUFACTURING COMPANY
POWER TROWELS • POWER BUGGIES • VIBRATORS • POWER SCREEDS • TRUCK MIXERS
Circle 29 on Reader Service Card



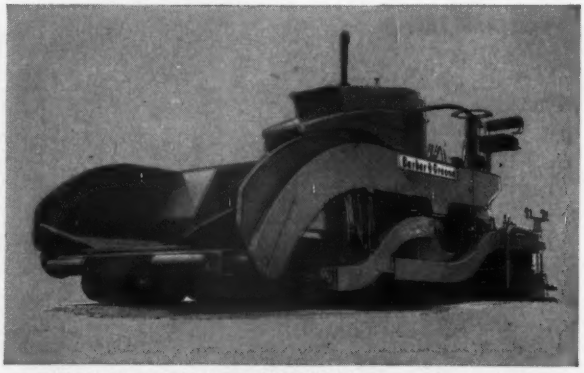
873 FINISHER—Compact, highly mobile for variety of scattered jobs. Paves on crawlers. Travels on rubber.



879-B FINISHER—Economy model in the general duty paving range.



SA-40 FINISHER — New general duty model is big advance in modern asphalt paving equipment.



SA-60 AND SB-60 FINISHERS—Ultimate in heavy-duty, high speed, high capacity, low maintenance asphalt paving. SA-60 is crawler mounted, SB-60 is pneumatic tired.

Barber-Greene's No.1 finisher line offers broadest choice, biggest values

Barber-Greene offers you the world's broadest selection of asphalt finishing machines—three sizes in five models—for most profitable equipment use. In addition, the versatile SJ-50 Road Widener-Shoulder Paver handles both asphalt and concrete with interchangeable attachments.

And here are reasons why each machine tops its class for performance and value:

- **Lowest paving cost per ton.**
- **Greater paving speed.**
- **Highest quality mat obtainable through tamping-levelling principle with compaction before strike-off.**
- **Easiest, most positive control.**
- **Self-cleaning hopper design cuts hand labor.**
- **Unobstructed visibility to hopper, spreading screws, joints or road edge, and truck.**
- **Operators' preference boosts productivity.**
- **Proved ability to lay all types of mix.**
- **Industry's finest parts and service support.**

Get your best deal from the man who sells the most asphalt paving equipment in your area.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

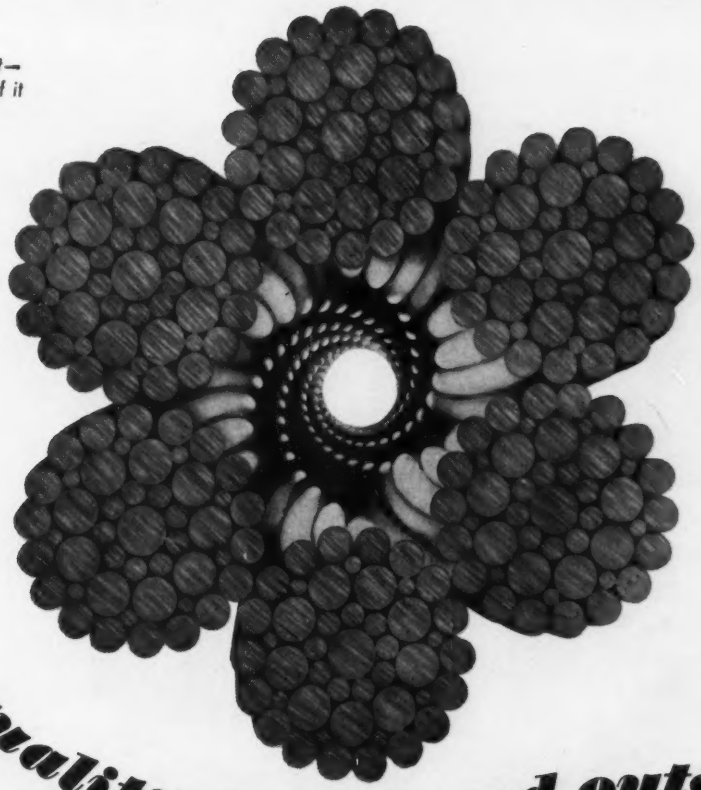
Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

Circle 30 on Reader Service Card

We put a lot of work into it—
You get a lot of work out of it



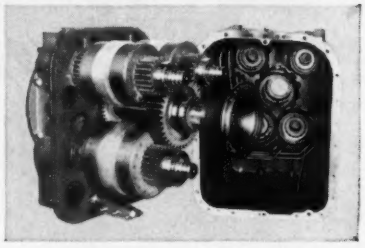
Quality inside and outside

Two important angles on wire rope savings: the *quality* and *uniformity* Roebling builds all the way through Royal Blue Wire Rope. They give you a big, extra margin of service through every kind of wear and tear — and combine to make extra strong Roebling Royal Blue the toughest wire rope you can buy. Find out more from your wire rope distributor, or write for free booklet to Roebling's Wire Rope Division, Trenton 2, N. J.

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corp.

Circle **31** *on Reader Service Card*



TEST REPORT on Twin Disc's New Power-Shift Transmission

Assignment: Hauling copper ore at Arizona mine

At the open pit copper mine of Inspiration Consolidated Company, Inspiration, Arizona, 22 dump trucks work around the clock, seven days a week, to haul out 105,000 tons of ore and 75,000 tons of waste rock. As a test of vehicle endurance, this is about as grueling an operation as you could find anywhere. It was here that Twin Disc's new Series TA-51-2000 Power-Shift Transmission was asked to prove itself.

For testing purposes the transmission was installed in Truck No. 62, a 40-ton Dart 37SL Dump Truck powered with a Cummins NVH-1200 Diesel. This engine produces about 420 net hp (2100 rpm) at the flywheel.

Along with the other 21 trucks in the Inspiration fleet, Truck No. 62 was put to work on the three-mile haul road between pit and crusher.

Result: Six more transmissions ordered

In six months on the job the Twin Disc transmission proved its worth. Regarding its performance, T. M. Anderson, Open Pit Foreman for Inspiration, had this to say:

"On the basis of cycle times, fuel efficiency and shifting ease, No. 62 has been beating them all since we put in that new power-shift transmission. The truck pulls away from the loading shovel in third converter drive and is already in fifth lock-up drive when it hits the grade."

As a result of the test model's outstanding performance, Inspiration has already ordered six more Twin Disc Series TA-51-2000 Transmissions.

For perfect matching of power to load, specify Twin Disc Power-Shift Transmissions in your vehicles.

Series TA-51-2000, designed for vehicles

- **Three models with ratio spreads of 5.45, 5.93 and 6.80.**
- **Capacities: 420 hp; 1050 lb/ft torque.**
- **Straight-through countershaft design with constant-mesh gearing.**
- **Five forward speeds; one reverse.**
- **Full power-shift in all ranges through oil-actuated clutches.**
- **Engineered as package unit with Twin Disc Single-Stage Torque Converter.**
- **Converter has lock-up clutch on front end to provide direct drive performance when desired.**
- **Hydraulic retarder saves wear on brakes . . . permits safe, controlled descents at higher speeds.**

ENGINE TO AXLE WITH... TWIN DISC POWER TRANSMISSION EQUIPMENT

TWIN DISC CLUTCH COMPANY, Racine, Wis. (Hydraulic Division) Rockford, Ill.

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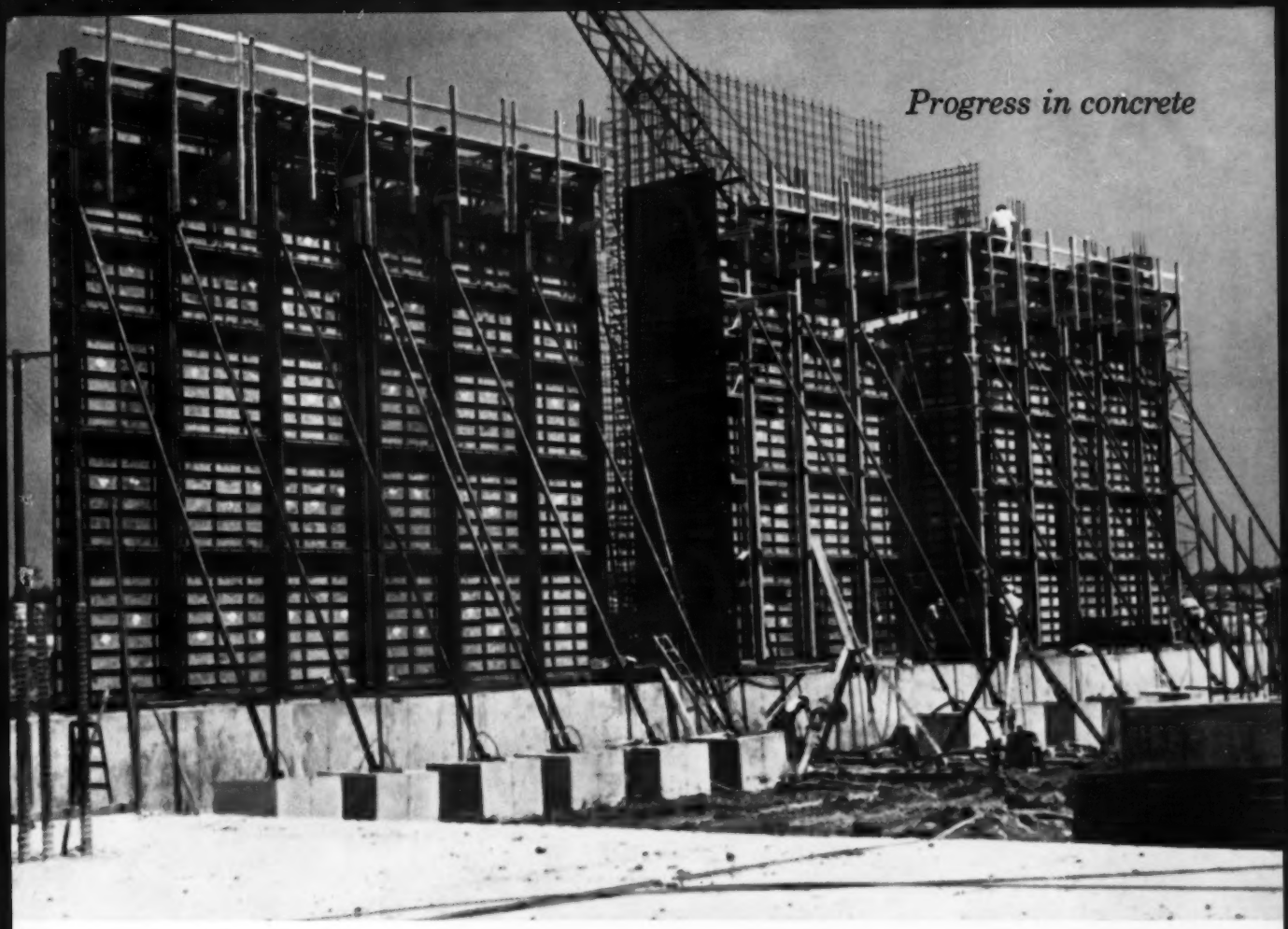
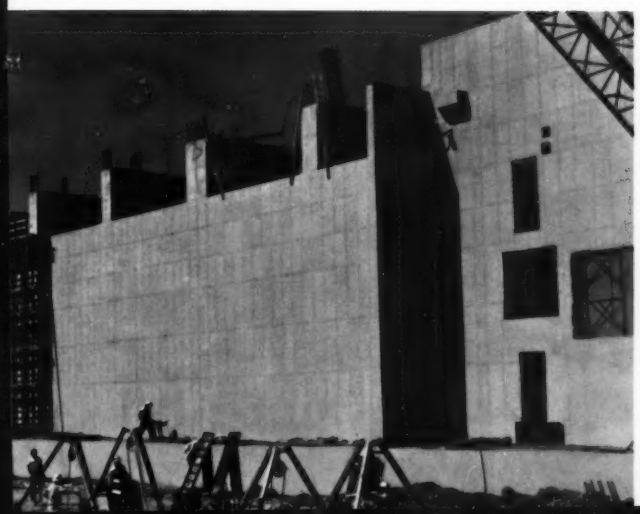


80,000 Cubic Yards of Concrete . . .

Symons Steel-Ply Forms Ganged 20′ Wide, 32′ High

Symons Engineering Service and low-cost form performance on previous jobs were the main reasons Fruin-Colnon Construction Co., St. Louis, Missouri, used Symons Steel-Ply Forms almost exclusively on their multi-million-dollar Lehigh Portland Cement Co. cement mill contract at Mitchell, Indiana.

Close work with the Symons Engineering Department and frequent visits to the job by Symons representatives resulted in a substantial savings in time, labor and cost of materials. Also important was Symons ability to anticipate job requirements, thus avoiding unnecessary delays.

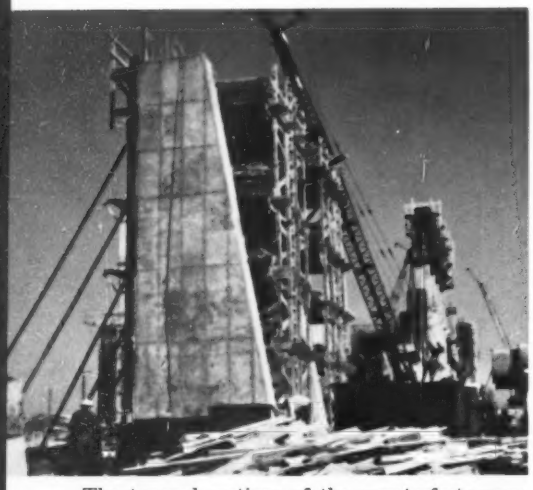


Concrete Construction 99′ High Overall

On the top of the footing mat—some 23 feet below ground level—contractor Fruin-Colnon started work by pouring a series of 78 column bases. Each of these bases measured about 27 ft long, 3 ft thick, tapering upward to a height of 23 ft and a length of 11 ft 10 inches. On top of these bases was then poured 78 heavy counterforts in the shape of large right-angle triangles, the long side of each triangle forming the inside wall of the column. From the 23 ft height above the base, the column then was continued upward another 23 ft, tapering again at that height to a length of 5 ft 10 inches; then continued upward again in a rectangular section of that length to its full final height of 99 ft. The tapered section of the counterforts were formed by using Symons Steel-Ply Forms in stepped-up heights, backing them with 6 inch steel channel strongbacks.

(*Please turn page*)

The straight columns in the center of the building are a uniform 11 ft 10 inches wide, 3 ft thick from the footing to the insets at the top.



The tapered sections of the counterforts were formed by using Symons Steel-Ply Forms in stepped up heights, backed with 6 inch steel channel strongbacks.

Symons Steel-Ply Forms were assembled on the ground and lifted by crane, then lowered over the steel reinforcing rods.

Forming 80,000 cu. yds. (contd.)

32 Foot High Walls

Next step was to connect these huge columns with sections of reinforced concrete wall, 32 ft high, 24 ft in span between columns (center to center) and 22 inches thick.

These were formed by ganging standard panels, connected by standard hardware. They were then reinforced, at 6 ft intervals, by strongbacks.

These big sections were built lying face-down on the ground and then lifted by cranes. Work scaffolds were also placed on the sections during construction.

Cast Concrete Blocks

To support the big ganged forms, Fruin-Colnon used six-inch pipe braces hinged to near the top of the forms on the steel strongbacks. Lower ends of these pipe braces were secured to specially-cast rectangular solid concrete blocks that weighed about 2 tons. Blocks were moved by cranes.

Pre-Fab Work Scaffolds

For stripping and erecting the opposite side of the mainwall, pre-fab work scaffolds were used.

These scaffolds provided a series of four working platforms. With the scaffolds set against the face of the form, workmen could strip and lay the panels flat on the platform at almost any level; then a crane would pick up the whole assembly and move it to wherever it was next needed.

Threading the Needle

Upper sections of the 78 counterforted columns, with their uniform 5 ft 10 inch by 3 ft sections, were cast in assemblies of Symons Steel-Ply Forms, reinforced at about 5 ft intervals with double 2 x 4 walers. Sections were lifted by crane, then lowered over the steel reinforcing rods.

Engineering Service

Symons Engineering Service helped to keep this large job moving at a fast, money saving pace. Symons Steel-Ply Forms can be rented with purchase option.

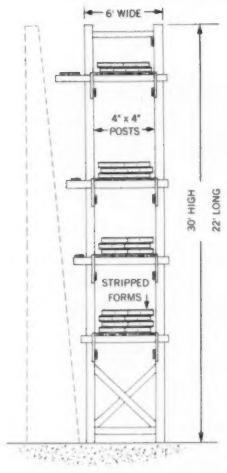
Symons

SYMONS CLAMP & MFG. CO.

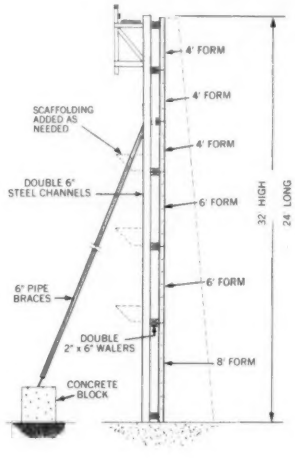
4249 Diversey Ave., Dept. IN, Chicago 39, Ill.

Warehouses Throughout the U.S.A.

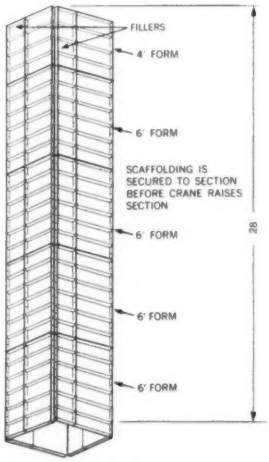
MORE ***SAVINGS*** *FROM* ***SYMONS***



Prefabricated work scaffolds were rectangular in shape, 30 ft high, 22 ft long on the side and 6 ft wide, made up of 4 x 4 wood posts and 2 x 6 stringers and diagonals.



Six-inch pipe braces support the big ganged forms. Lower ends of the pipe braces are secured to specially-cast solid concrete blocks of roughly a cubic yard in size.



Upper sections of the 78 counterforted columns, with their uniform 5 ft 10 inch by 3 ft section were cast in these pre-fab assemblies.

INTRODUCING INDUSTRY'S MOST COMPACT
60-HP HEAVY-DUTY AIR-COOLED ENGINE
• 4-cycle 4-cylinder V-type
• 36 hp at 1400 rpm to 60.5 hp at 3000 rpm
• 154 cu. in. displacement
• 7.1:1 compression ratio
• weighs only 521 pounds dry
NEW 60 HP. WISCONSIN MODEL V-460D WITH VALVE-IN-HEAD DESIGN!

Now Wisconsin offers you more power . . . amazing compactness . . . greater efficiency and economy . . . and simplified upkeep.

On all counts, the new V-460D is the most compact 60-hp heavy-duty air-cooled engine on the market. It is precision-built for all-weather dependability and long life in severe applications. And it's designed to bring you savings as soon as you specify it for your equipment or job.

Weighing only 521 pounds, the V-460D requires less structural support. Thus you can get equipment which is lighter and easier to handle — has greater payload and work capacity — and costs less to own and operate.

Valve-in-head design and higher compression bring you greater fuel economy with *regular* gasoline. They provide cooler and more efficient engine performance, and slash upkeep. Even removing a cylinder for piston or ring replacement takes only minutes!

Check its high-torque lugging power — its economical operation — and its simplified maintenance. Then specify it for your equipment or operation in the 36- to 60-hp range. Get Bulletin S-282. Write Dept. C-31.

CHECK THESE FEATURES:

- **Center main roller bearing and tapered roller end main bearings to absorb all thrusts.**
- **Stellite-faced exhaust valves and positive rotators for up to 500% longer valve life.**
- **Controlled pressurized lubrication for full-time oiling to all working parts.**
- **Automatic protection against overheating and servicing neglect.**
- **12-volt electric starter with distributor ignition.**
- **Wide range of optional equipment and accessories.**

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

I-341

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Circle 35 on Reader Service Card

NO OTHER TRUCK

can power its way thru sandier, muddier going...
haul away bigger, more torturous loads...
yet stay out in front on the road so often!

This giant, diesel-powered "230" model can haul gross combination loads in excess of 100,000 lbs. Extra heavy-duty frame and front end.

INTERNATIONAL®

INTERNATIONAL gets you in and gets you out—fast: Higher average road speed of powerful, true-truck INTERNATIONAL V-8 engines cuts down trip time, picks up as many as *two extra 40-mile round trip hauls per day.* V-8's up to 257 hp; gas Sixes up to 212 hp; diesels with 695 lb.-ft. of torque and up to 262 hp.

INTERNATIONAL pulls you through the heaviest going: Newly-designed, rugged IH through-drive tandem axles handle big payloads without letting you down. Induction-hardened IH axle shafts are up to 10 times more resistant to shock loads . . . eliminate "fan out" and the possibility of fragments in the differential.

INTERNATIONAL carries bigger loads: These new lightweight IH bogies (up to 156 lb. lighter), plus heavy-duty springs and frames, give you bigger payloads, more savings in weight. Three new tandem axles now available, in 30,000, 34,000 and 38,000 lb. capacities. All three are backed by a *100,000 mile warranty!*

Nothing could be more important to an operator working on a ton-mile rate than these proven built-for-work features. See the INTERNATIONAL Truck Dealer or Branch nearest you, for your next tough job. And remember this: INTERNATIONAL has a nation-wide network of sales and service centers to keep you operating. International Harvester Company, Chicago.

Tight Schedule? Get Shipment in 24 Hours! INTERNATIONAL'S unique dump truck pool has models in popular sizes and specifications ready for shipment to you in 24 hours. Your IH Dealer is set up to handle your needs for emergency equipment. Just pick up the phone and call him.

Sure traction underneath your payload. Powerful 6-cylinder INTERNATIONAL R-line models have GVW ratings up to 53,000 lbs.

Power-geared for a more profitable operation. There isn't a tougher, more dependable V-8 built for shortening round-trip time!

TRUCKS WORLD'S MOST COMPLETE LINE IH®

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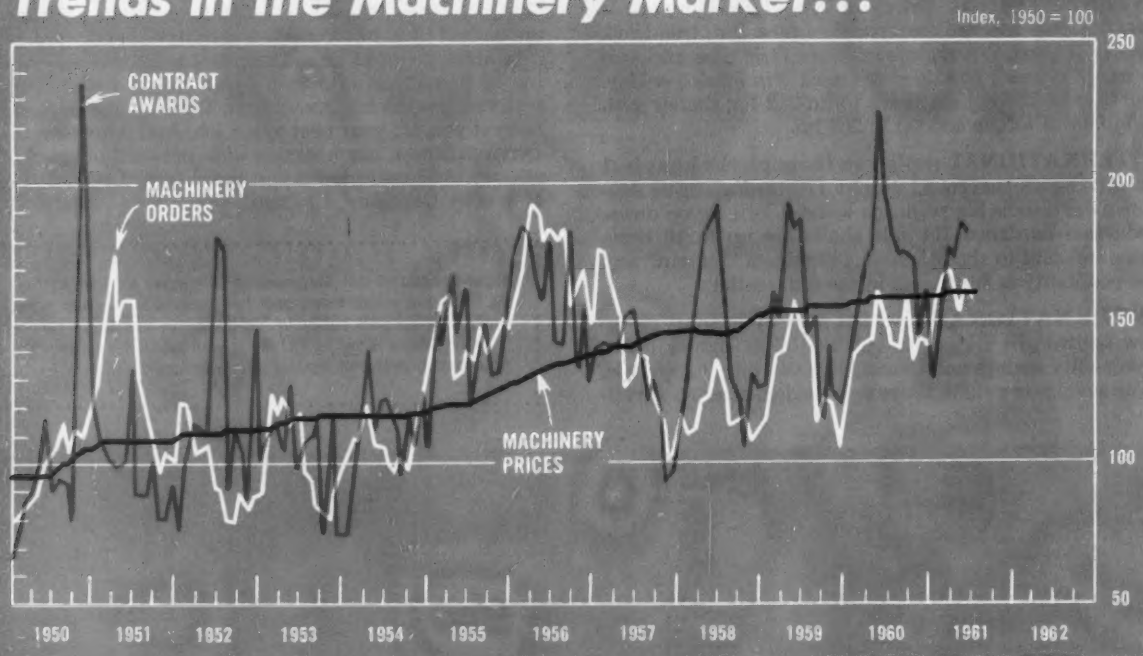
Trends in the Machinery Market...



Price Index

	JULY 1961	MONTH AGO	YEAR AGO	% CHANGE 1960-1961
All Types of Equipment	178.2	178.2	175.5	+ 1.5
Cranes; Draglines, Shovels	**173.4**	**173.4**	**173.4**	**0**
Shovel, ½ cu yd	173.1	173.1	167.9	+ 3.1
Shovel, ¾ cu yd	178.8	178.8	175.4	+ 1.9
Shovel, 1-1½ cu yd	191.0	191.0	188.2	+ 1.5
Shovel, 2-2½ cu yd	169.1	169.1	170.3	— 0.7
Shovel, 3-3½ cu yd	159.8	159.8	167.8	— 4.8
Shovel, 6 cu yd	197.9	197.9	197.9	0
Crane, truck mounted	165.9	165.9	168.2	— 2.4
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	162.9	0
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	**165.7**	**165.7**	**166.6**	**— 0.5**
Scraper, 4 wheel, 8-10.5 cu yd	145.3	145.3	155.0	— 6.3
Scraper, 4 wheel, 12-15 cu yd	153.3	153.3	156.8	— 2.2
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	126.2	0
Grader, heavy duty	174.1	174.1	174.0	+ 0.1
Grader, light and medium	170.9	170.9	171.1	— 0.1
Tractors (non-farm, incl industrial)	**195.1**	**195.1**	**192.0**	**+ 1.6**
Wheel type, off-highway (a)	127.6	127.6	129.2	— 1.3
Crawler type, 50-74 dph	205.3	205.3	200.4	+ 2.4
75-99 dph	204.8	204.8	201.2	+ 1.8
100-154 dph	200.2	200.2	197.3	+ 1.5
155-200 dph	208.6	208.6	203.3	+ 2.6
Machinery, Tractor Mounted	**177.9**	**177.9**	**169.5**	**+ 5.0**
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.4	201.4	186.6	+ 7.9
Cable power control unit	148.8	148.8	152.9	— 2.7
Loader, tractor shovel	166.7	166.7	163.2	+ 2.1
Specialized Machinery	**159.6**	**159.6***	**158.7**	**+ 0.1**
Ditcher	153.8	153.8	153.8	0
Roller, tandem	228.5	228.5	226.4	+ 0.9
Roller, 3 wheel	178.7	178.7	178.7	0
Ripper and rooter	164.5	164.5	156.6	+ 5.0
Dewatering pump, 10 M gph	108.5	108.5	111.5	— 2.7
Dewatering pump, 90 M gph	156.1	156.1	151.5	+ 3.0
Portable Air Compressors	**183.6**	**183.6**	**167.5**	**+ 9.6**
Contractor's Air Tools	**190.5**	**190.5**	**181.6**	**+ 4.9**
Mixers, Pavers, Spreaders	**161.6**	**161.6**	**161.8**	**— 0.1**
Mixer, portable, 11 cu ft	169.6	169.6	166.8	+ 1.7
Mixer, portable, 16 cu ft	175.8	175.8*	172.7	+ 1.8
Mixer, truck, 6 cu yd	131.1	131.1	135.1	— 3.0
Mixer, paving, 34 cu ft	192.9	192.9	196.7	— 1.9
Concrete finisher & spreader	198.4	198.4	201.9	— 1.7
Bituminous distributor	124.5	124.5	126.2	— 1.3
Bituminous spreader	179.4	179.4	179.4	0
Bituminous paver	168.6	168.6	165.6	+ 1.8
Off-Highway Trucks, Wagons (b)	**102.3**	**102.3***	**102.5**	**— 0.2**
Contractors off-highway truck (b)	102.0	102.0	102.0	0
Trailer dump wagon (b)	104.5	106.7	106.7	— 2.1

● (a) January, 1955 = 100 ● (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

List Prices Steady Across the Board

LIST PRICES of new construction equipment were unchanged between June 15 and July 15 for the long line of items covered by the Bureau of Labor Statistics indexes (see table at the left).

The over-all price index held at 178.2 on July 15, based on average prices during 1947-49 as 100 (in the chart, the price index is shifted to a 1950 base for comparison with the new orders trend.) While the index remained a shade under the peak it set in May, it topped a year ago by 1.5%. Most of this increase, however, came in 1960.

Prices have been much steadier this year. During the first seven months of '61, the BLS index rose only 0.6%, much less than comparable increases of 1.5% in the same period of 1960.

New orders placed with manufacturers by their distributors dipped in June, according to the McGraw-Hill Economics Dept.'s index. This indicator, based on reports from cooperating equipment makers, moved from 165 in May to 158 in June.

Despite the June dip, the new orders index was 7% higher than June '60 and topped a year ago for the 11th consecutive month. For the first half of 1961 the index averaged 160, up 11%.

While the heavy construction contract award index averages close to the new orders index for construction equipment, contracts have been running slightly behind a year ago. For the first half of '61, the contract index averaged 164, off 2% from last year. At the end of the seven months the contract index average climbed to 166 but remained 2% off a year ago. After moving up in June to 186, July saw the index back off slightly to 183.

US RUBBER CONVEYOR BELTING

New U.S. SlurryKing takes loads up steeper grades

Now you can carry slurries, wet cement, paper pulp slush, and other wet or dry materials up steeper inclines than possible with conventional smooth-surfaced belts. The new U.S. SlurryKing was designed especially to prevent avalanching of solids, even carries the fluid portion of wet mixes along with the solids.

An exclusive heavy-duty cover design withstands the severely abrasive effects of both wet and dry materials to retain the belt's hill-climbing ability indefinitely.

What's more, the U.S. SlurryKing enables you to drain or retain the fluid portion of slurries depending upon the angle at which the conveyor and idler rollers are set. You enjoy a new kind of belt performance and flexibility.

You'll find the SlurryKing the answer wherever you need to move raw materials up steeper inclines with greater safety and control.

• • •

For information about the SlurryKing, see your "U.S." Distributor. He's your best on-the-spot source of quality products, quick delivery, and technical service.

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US RUBBER **United States Rubber**

MECHANICAL GOODS DIVISION

Rockefeller Center, New York 20, N.Y.

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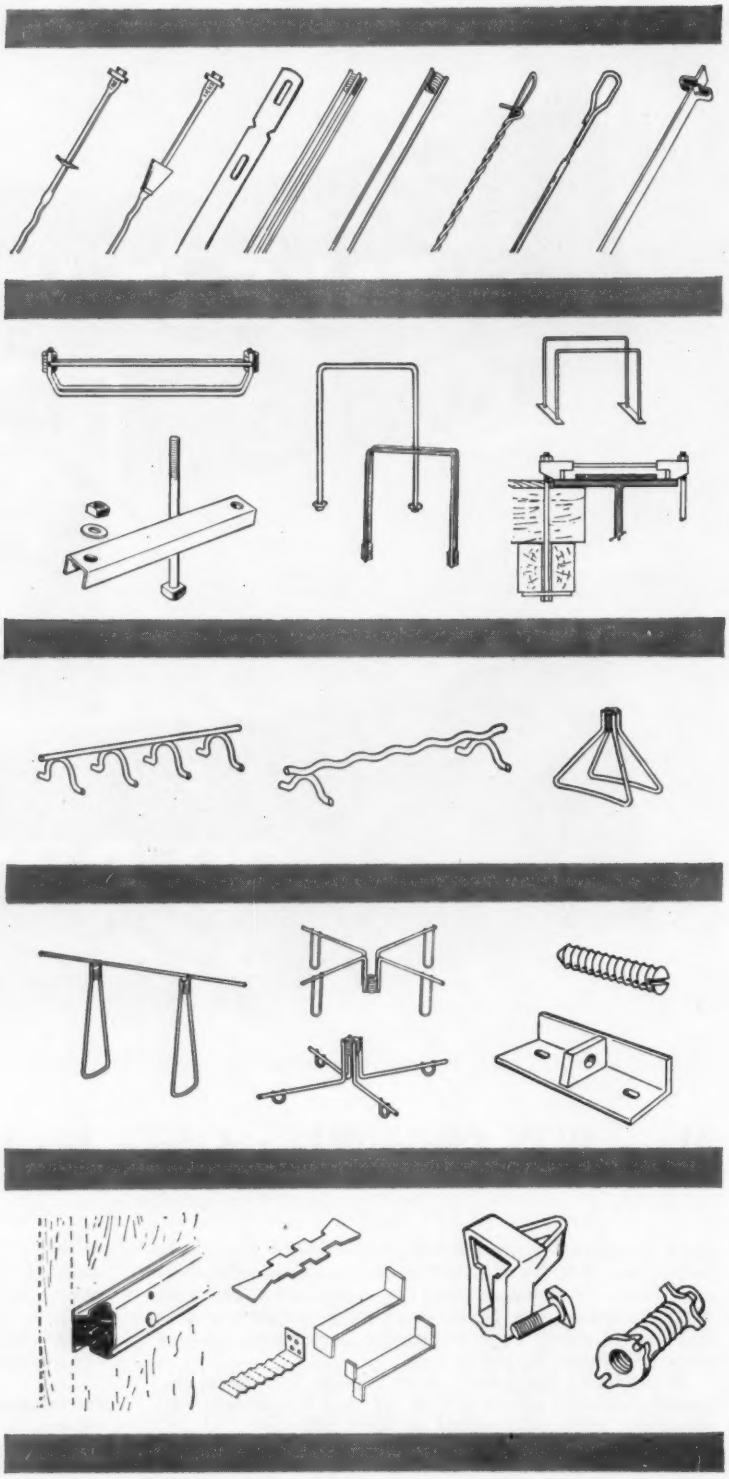

Concrete forming costs going up? Dayton Sure-Grip can help you bring them down with a combination of technical service, a *complete* line of accessories of dependable quality—established by 37 years of manufacture—and the efficient on-the-spot service of a nearby DSG Distributor.

The DSG line is *complete*—from ties for either conventional or factory-built forms to anchors for heaviest precast work. This one source of supply saves your time in ordering, checking, receiving, use.

Dependable DSG accessories provide safe, fast, reliable forming . . . extra strength without premium cost.

There's a Dayton Sure-Grip Distributor ready to serve you. He's experienced and reliable . . . capable of helping you solve your forming problems.

Cut your forming costs. Let Dayton Sure-Grip service help you eliminate mistakes in planning, procurement and form production. . . . Have the reliable accessories you want, when you want them. Write today for our free catalog and prices.

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The T-340 has eye-opening capacity for handling stock-piling and clean-up work. In any material it gets heaping loads in a cycle-speeding 2nd and 3rd gear range of 2.2 to 3 mph.

Here's the only bottom-dump action available in any ¾-yd loader—the amazing International Drott T-340 Four-in-One—a clamshell, scraper, dozer, and standard bucket, *all in one!*

Lick small job costs!

with T-340 stamina and 47 hp economy*

Here's go-anywhere traction at a budget price! . . . in a compact size that's easily transported between the host of small jobs that continually confront every contractor and public works official. A five-ton tilt-bed trailer pulled by a pick-up is all you need to take an International® T-340 or TD-340 from job to job quickly, at low cost.

At the job, you'll be surprised—and pleased—to see how much work a T-340 will turn out with 85-inch Bullgrader®, ¾-yd International Drott 4-in-1, 10-foot backhoe or other low-cost equipment ideally suited to the widest range of jobs. Exceptional power-to-weight ratio gives these sturdy crawlers the push and pull-power that would do credit to larger, more costly units. For loading and dozing you can get *five* reverse speeds with Fast-Reverser, each 22½ per cent *faster* than the corresponding forward speed. Planetary-type steering gives easy control with the steering levers, alone.

Users call them "terrific!"—and the International Dealer near you will gladly show you *why* with an on-the-job T-340 or TD-340 demonstration. For new, illustrated catalog, write International Harvester Company, Dept. CM-9, P.O. Box 7333, Chicago 80, Illinois. **Maximum engine hp at standard conditions*

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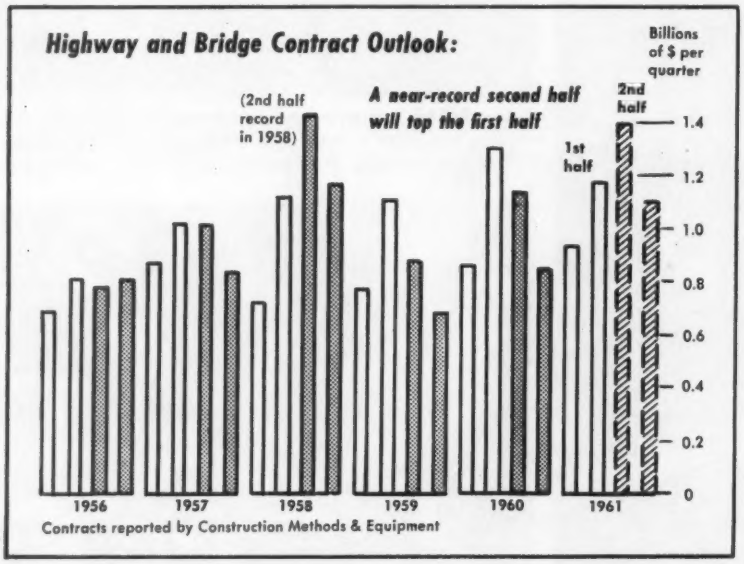


Outlook Brightens for Roadbuilding Contractors

HIGHWAY CONTRACTS set a record pace in the first half of '61 and the second-half totals promise to approach the all-time peak reached in the last half of 1958. Bridge construction awards will also rise at a faster clip in the second half of 1961 than in the first six months.

For the full year, record highway contracts and the fifth highest total of bridge awards will lift 1961's highway and bridge construction to the highest ever recorded by *Construction Methods*. This year should top $4.6 billion, up 10% over 1960 and about 4% more than 1958's record.

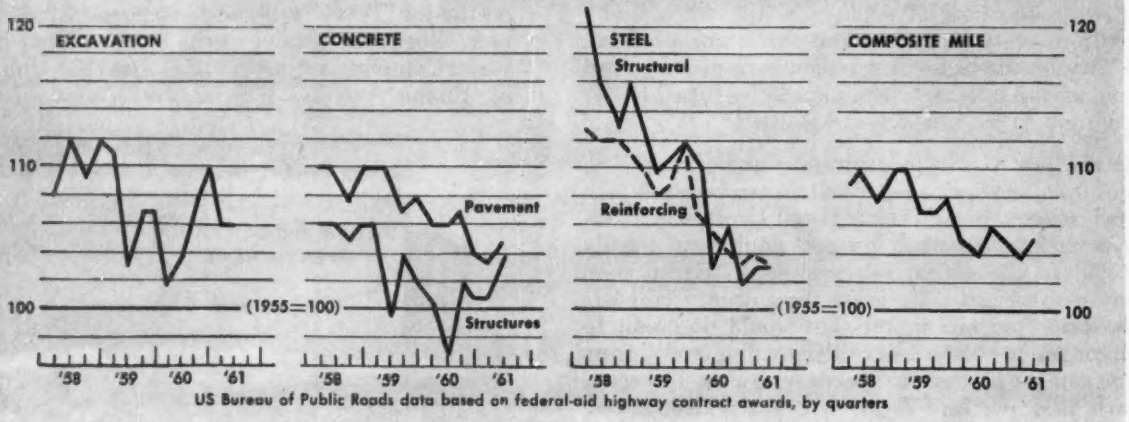
A sharp step-up in highway and bridge contracting was clearly evident during July and August. Comparing the first seven weeks of the second half with the last seven weeks of the first half, *Construction Methods* figures show highway awards jumped 24% to a weekly pace of $89 million, and bridge awards soared 94% to a weekly average of $21 million.

Although these percentage gains tend to exaggerate the uptrend, they demonstrate the new strength of the highway and bridge market since the Highway Act of 1961 was passed by Congress early this summer. The federal-aid highway program will expand each year for the next few years (*Construction Methods*, May, p. 48). A solid financing base assures the continuity of this program. All Interstate System work should be awarded by 1972 under present plans.

Apportionments of federal aid to the states are once again being made well in advance to enable state highway departments to plan for a continuous flow of highway contracting.

And the U.S. Bureau of Public Roads is helping state highway departments speed contracting schedules by releasing the quarterly schedule of federal aid about six weeks prior to the start of the quarter. In mid-August, BPR

continued on page 46



Special report to users of Caterpillar equipment:

CAT CATERPILLAR

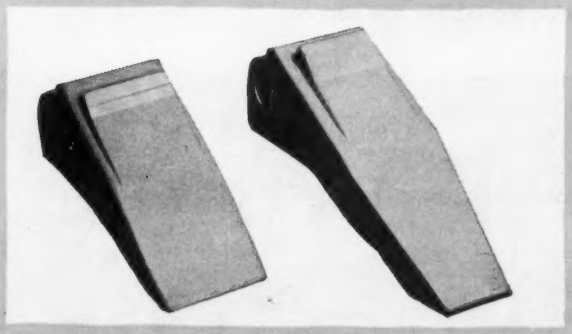
Parts you can trust
...cost less per hour

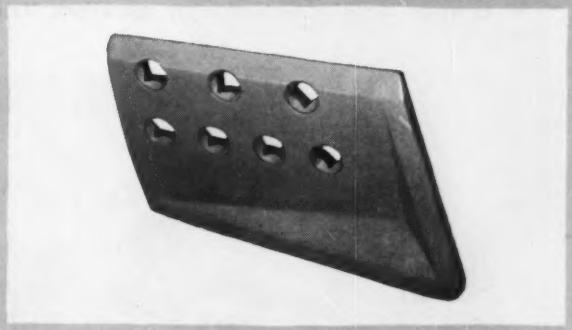
New Cat No. 8 and No. 9 Ripper Tips outproduce other brands 25 to 50% in field tests

That's the kind of news you can use—to cut costs. This newcomer to the Caterpillar line of ground-engaging tools is making a name for itself with cost-conscious users.

They're exceptionally wear-resistant—hardened to Rockwell C50 for longer wear-life under any conditions.

Check the price! Improved Cat Tips sell for about the same *or even less* than other leading brands.





They're available in two new designs. Both the short and long tips shown in the photograph are *self-sharpening* to keep their working edge until replacement. The long tip gives extra wear-life with only a slight reduction in impact strength. Low-cost, weld-on shank adapters are available for *all brands* of shanks. No need to wait—you can put these new Cat Tips on your job immediately.

In field tests the short tip was pitted against two leading brands on rippers working in caliche and cemented conglomerate beds. The Cat Tip outproduced the other brands 25-50%—representing savings of 38-54% in replacement costs.

Outstanding impact strength! One No. 9 Tip, tested in *solid* granite, took 13 smashing blows from another D9 pusher that backed up 10 feet before each charge at the stalled D9 Ripper.

And here's another money-saving newcomer—Cat's new No. 7, No. 8, No. 9 End Bits are redesigned for better digging ability. They self-sharpen as they wear away for continuing like-new performance. They're forged alloy steel and heat treated for outstanding strength and wear-resistance.

Compare other ground-engaging tool brands against the Caterpillar line. Keep machine-hour records and find out for yourself which is the best buy. Those who do, buy Caterpillar.

See your Caterpillar Dealer for the best in parts and service.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

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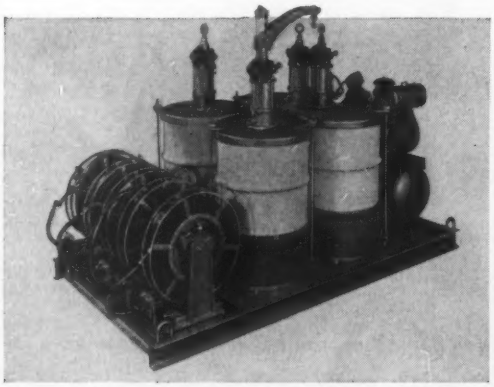
keeps it moving on time at less

The big spreads stay on the job when an Alemite Portable Service Station is there. Dozers, buckets, scrapers, shovels, trucks . . . every piece of equipment is serviced at the site—not miles away. Downtime is reduced, more equipment hours are applied to the job, costs go down . . . and profits go up!

Your choice of Alemite's fine power lubrication equipment is arranged to meet the specific need of your particular spread—with the dependability you've come to respect.

Alemite Portable Service Stations can include an air compressor, high and low pressure Alemite pumps, as many as 8 service

Unlimited variations of top quality equipment can be skid or truck-mounted to provide faster "back to work" facilities in heavy-duty operations. Nationwide availability and service.



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cost with less work!

reels, tire inflating and air jet cleaning equipment, hoists, flood lights, water tank, tool box, and even PTO.

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Alemite's new, compact, powerful bucket pump Model 7138 V.P. was designed to handle multi-purpose lubricants. Volume (one cu. in. per stroke) and pressure (up to 5,000 lbs.) built into one pump. Fits 35-lb. container. Ask your Alemite representative for full details.

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made the fifth consecutive advance release of the quarterly installment of federal-aid highway money.

Wide Gap Still Exists Between Costs, Bids

While the outlook for new business is cheery, many a highway or bridge contractor will furrow his brow when his thoughts turn to low bid prices that prevail in today's market.

Bid price indexes compiled by a number of state highway departments and by the U.S. Bureau of Public Roads point up the problems that rise from too many contractors chasing too few contracts; although bid prices are firming up in many states, a wide gap exists between costs and prices. In some states, competition is still forcing bid prices down while costs continue their rise.

The Composite Mile Index for federal-aid projects computed by the Bureau of Public Roads (see the chart on page 42) turned upward slightly in the second quarter. This was a sign that increased volume of work underway and coming up for bids was leading to more realistic bid prices.

But it also was obvious that bid prices were still deep in trouble. The second quarter rise in BPR's Composite Mile Index didn't recover the first quarter markdown. The index remained slightly below the final quarter of 1960 and was only 0.6% higher than a year earlier. By contrast, basic construction materials and labor costs in June were 2.9% higher than a year earlier, according to the Construction Cost Index compiled by Engineering News-Record, sister publication of *Construction Methods*. Wheras the BPR Composite Mile Index in the second quarter was 6% under its late 1957 peak, the ENR Construction Index was at a record high and still climbing.

Bid price trends are mixed on a state-by-state basis. But the second-quarter pattern tended to be upward, confirming the BPR Composite Mile Index trend on federal-aid work. Highway price indexes rose 10% in California, 4.7% in Colorado, 1% in Michigan, 3% in South Dakota (first half of '60 vs second half of '60), 7% in Texas, and 5% in Virginia.

Compared to the second quarter of last year, bid prices were up sharply in these three states: Colorado, 13%; South Dakota, 10% and Texas, 17%. But California's index was about the same as a year ago, while Oregon was down 3% and Michigan and Virginia were 2% under a year ago.

Bid prices on Connecticut state highway projects were about the same in the first half of '61 as in the second half of '60 and only about 1% higher than in the first half of '60.

Skidding sharply lower were second-quarter '61 bid prices in Idaho (off 30%), Nevada (off 17.5%), and Washington (down 20%). The sharpness of these declines, however, reflected unusually high bid price indexes in the first quarter. Idaho and Washing-

continued on page 50

FLECO® FACT FILE

. *fast, complete removal of big trees!*

Capable of reaching up to 21 feet above the ground, the new Fleco Tree Pusher exerts tremendous leverage against big trees to push them out, root and all. At right, a Tree Pusher and blade on a D7 tractor push over a 3 foot hardwood tree in 25 seconds — faster and more economical than any other method. With a Fleco Tree Pusher and Rake combination, large and small growth can be rapidly grubbed and stacked into dirt-free piles, leaving the land completely cleared with no stump removal problem. Available in two models, the Tree Pusher can be attached to the top of a Rake or blade, as pictured, or can be equipped to be operated independently of the blade with an independent cable control. The bolt-together design permits easy disassembly for transporting. Available for both straight and angling dozer.

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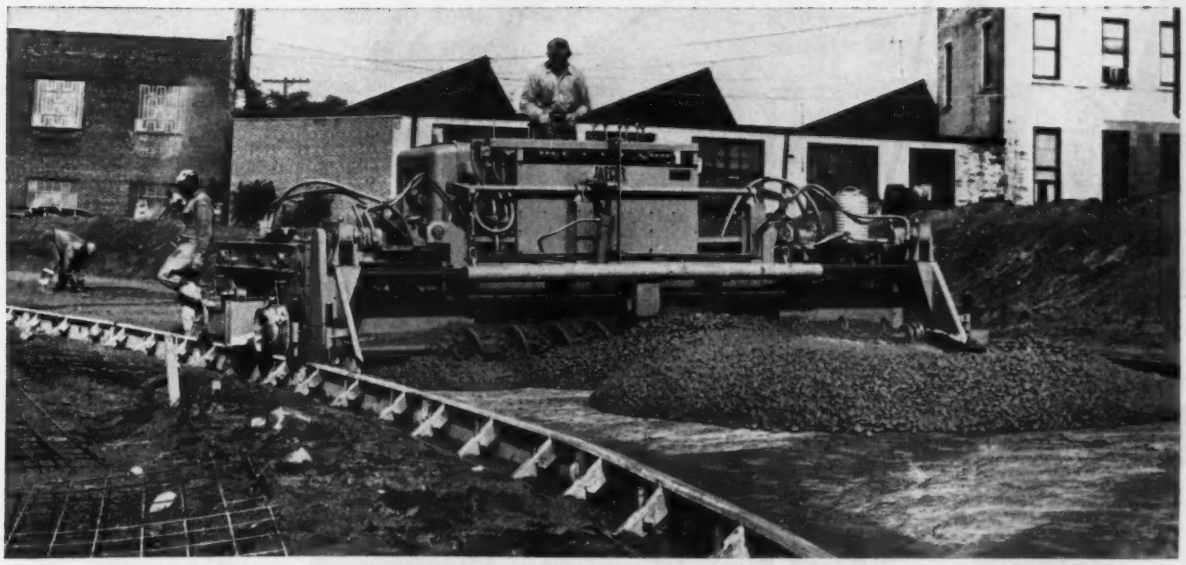

OVER 1200′—2140 SQ. YDS.—OF FLARED AND SUPER-ELEVATED INTERCHANGE SLAB IN ONE DAY—ON TWO RAMPS! Jaeger's one-man Spreader-Finisher started work on the new Shoreway interchange in downtown Cleveland, Ohio, at 6:50 a.m. By noon, the first ramp (704′) was completed—base, reinforcing steel and top course. After moving to another ramp, 500′ more was completed by 4:30 p.m. Photo shows spreading and striking off of base course.

SPREADING, STRIKING OFF AND FIRST PASS ON TOP COURSE WITH OSCILLATING DIAGONAL SCREED. The ramps flare from 14′ to 18′ with super-elevations to 13½″ in 18′ slab. The same Jaeger 12′-18′ Spreader-Finisher also placed the 240′ acceleration lanes which varied from 14′ down to 2′. Horvitz Company, of Cleveland, Ohio, was the contractor.

One-man gang

Simplifies and speeds interchange work

It spreads and finishes. Self-widens for 6′ of flare. Lays super-elevations with diagonal screed. Lets you pave ramps as fast as you can pour!

Flexible is the word for Jaeger's 12′-18′ Spreader-Finisher. That's why it's the most efficient machine — a real "one-man gang" — on variable-width interchange work. Traction wheels and spreading screw shaft are infinitely self-adjusting by hydraulic power. Lays any width from 12′ to 18′ without stopping. Screed end shoes have same infinite adjustability, with ratchet lever.

On super-elevations, finishing screed hydraulically adjusts to any diagonal for positive concrete placement against the higher form. A turn of a ratchet lever raises or flattens the overall crown of the screed.

Dual spreading screws can be independently speeded up, reversed, raised or lowered by hydraulic power. Handle dual-drum paver output with ease and perfect control.

Owners report saving up to hundreds of dollars a day on interchange work. Ask your Jaeger distributor for details or write THE JAEGER MACHINE CO., Columbus 16, Ohio. JAEGER MACHINE CO. of Canada Ltd., St. Thomas, Ontario. Worldwide sales and service through Jaeger International Corp., Apartado 137, Panama, R. P.

JAEGER HYDRAULIC PAVING EQUIPMENT

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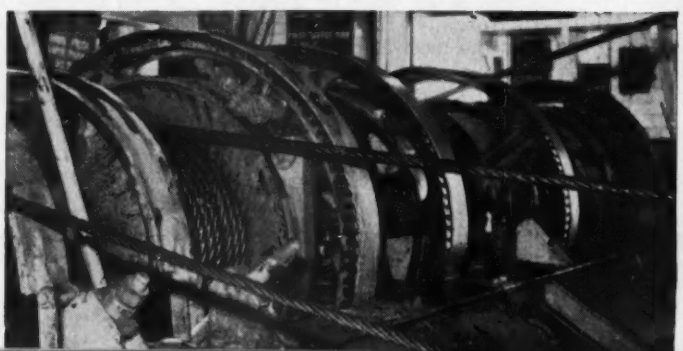
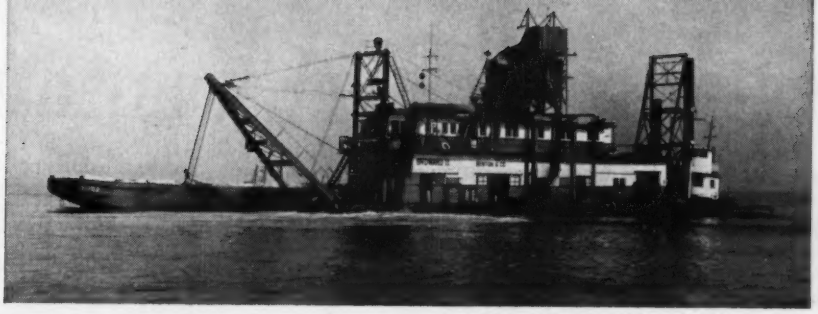
USS Tiger Brand Wire Rope on cutter hoist operates in muck and salt water and is designed for severe service.

Various hoists rigged with USS Tiger Brand 6x19 Wire Rope for its ability to stand up under the most severe service conditions.





Digging sea shells for Florida highway construction is no child's play. It takes a wire rope with plenty of guts to help keep costs low. USS Tiger Brand does the job.

Tiger on the Spot at St. Petersburg, Florida

Dredge sucks muck and sea shells ... a tough job for wire rope

Digging sea shells for highway construction in Florida may sound like an easy job ... but dredge operators will tell you it's one of the *toughest* there is on wire rope.

On any dredge of the type shown here, the hardest work is performed by the swing lines. These are attached to anchors placed on each side and slightly forward of the dredge. By applying power to one swing line while the other is slacked, the forward end of the dredge is swung in an arc in order to move the cutter head and suction constantly into new bottom material.

At the rear end of the dredge, you will notice two tall pipes supported in a vertical plane by an H frame. These are the spuds, one of which is lowered onto the bottom and acts as a pivot for the swinging action of the dredge.

The wire ropes for the swing lines and ladder hoist work constantly in and out of salt water. They are subject to corrosion, abrasion, severe loads, shock and fatigue. Other wire rope uses for spud hoist lines, gauge lines and main stays are less severe.

USS Tiger Brand Wire Rope has been used for all these applications in various diameters from 1½ inches down to ⅜ inch. Most of the ropes are of 6x19 construction Excellay Monitor with wire core or fibre core depending on the use.

Two dredges operate in this area: the *Broward II* owned by Benton & Co., is digging shells; the R. C. Huffman Construction Co. operates a similar dredge called *Number Three* which is filling in land for a new jet runway for the St. Petersburg International Airport. USS Tiger Brand Wire Rope for each dredge was supplied by the Gulf Coast Industrial Supply Co., St. Petersburg, Florida.

For more information, see your local Tiger Brand Distributor or write American Steel and Wire, Dept. 1234, Rockefeller Building, Cleveland 13, Ohio. *USS and Tiger Brand are registered trademarks*

American Steel and Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

ton both reported record high indexes in the first quarter, while Nevada's index reached a 3½-yr high. Nevertheless, Nevada's index in the second quarter was 6% under a year ago and Idaho's index was off 2%. Washington bucked this trend, holding a 3% rise over a year ago.

Big Tollroads Head for Contract

Tollroad agencies in a number of states have been busy this year preparing plans for several new routes and for extensions to existing tollroads. Between now and the end of this year, tens of millions of dollars worth of tollroad construction is likely to go on contractor's books, with much more to come in 1962 when the rebound in tollroad construction is likely to hits its stride.

Construction of the $70-million Western Kentucky Turnpike extension is expected to start this month instead of the first of next year. The Kentucky Turnpike Authority arranged for the money late in June when it negotiated the sale of $118 million in revenue bonds to private investors.

Construction may start shortly on the $90-million, 40-mi Northeast Expressway from Baltimore to the Delaware line. This route is planned to connect with a similar new route in Delaware. The two-state route, to cost an estimated $140 million, will link Baltimore directly with Delaware Memorial Bridge. The Delaware State Highway Dept. received authority last month from the legislature to sell revenue bonds to finance a "Delaware Turnpike." Delaware also is considering another toll route from the bridge to the Pennsylvania line.

Florida's Turnpike Authority expects that November will see the start of construction on a 156-mi extension of the Sunshine State Parkway from its present terminus at Fort Pierce northward to Ocala. But first a court test must clear a proposed $160-million bond issue needed to finance the project.

There's hope of making a start next year on an extension of the Oklahoma Turnpike from Oklahoma City via Lawton to the Texas line near Wichita Falls, Texas. Estimated cost is $59 million. A second extension, probably running eastward from Tulsa to the Red River, might come later although it is yet to be declared feasible and no traffic estimate has been made for it. The Oklahoma legislature authorized the two turnpike extensions last July. Validity of this law is slated for a Supreme Court test. The Turnpike Authority hopes to arrange a bond sale in November, permitting a start in early 1962.

In Massachusetts, there's a hassle over whether to build a tollroad or free highway from the Massachusetts Turnpike's present terminus to Boston.

The Massachusetts Turnpike Authority last April negotiated a $91-million contract with a joint venture of Perini Corp., Framingham, Mass.; Morrison-Knudsen Co., Boise, Idaho; and Kaiser Co., Oakland, Calif. The award

continued on page 53

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Platform Trailers

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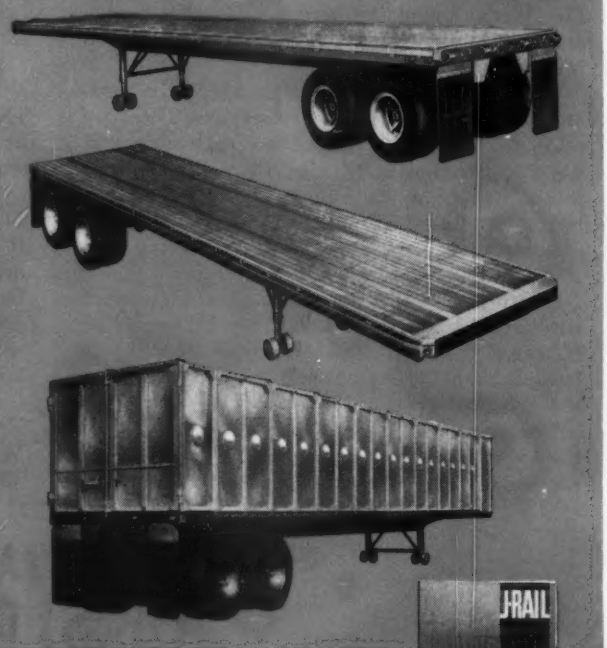
Trailmobile offers you a complete line of platform trailers for distributed or concentrated loads. Interchangeable side panels also available for conversion to open top trailers. A variety of financing plans to meet your conditions. Sales and service branches in fifty-four cities. For complete information, call the Trailmobile office nearest you or use the coupon.



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Trailmobile Inc., 31st & Robertson, Cincinnati 9, Ohio • Please send folders covering platform trailers.

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Wherever he goes . . . he gets service!

Paul Black is building his 26th lake! What his next job will be or where it will take him, he has no idea. But one thing's for sure—he needs plenty of fast, dependable service for his equipment wherever he is.

His company, the Black Excavating & Contracting Company of Flat River, Mo., often works on projects miles apart. The equipment must be ready to move to different locations at a moment's notice. "And the supplier has got to move with us," states Black. "Cities Service does this . . . and plenty more!"

Black is pleased with all the Cities Service products he uses and is particularly impressed with Cities Service C-500 Oil. "No sludge or varnish problems with C-500," he says. "It's the best lubricating oil I've ever used."

Contractor Black knows he gets the best products, best service from Cities Service. *You* will, too! For complete information, call your nearest Cities Service office or write: Cities Service Oil Company, 60 Wall Street, New York 5, New York.

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QUALITY PETROLEUM PRODUCTS

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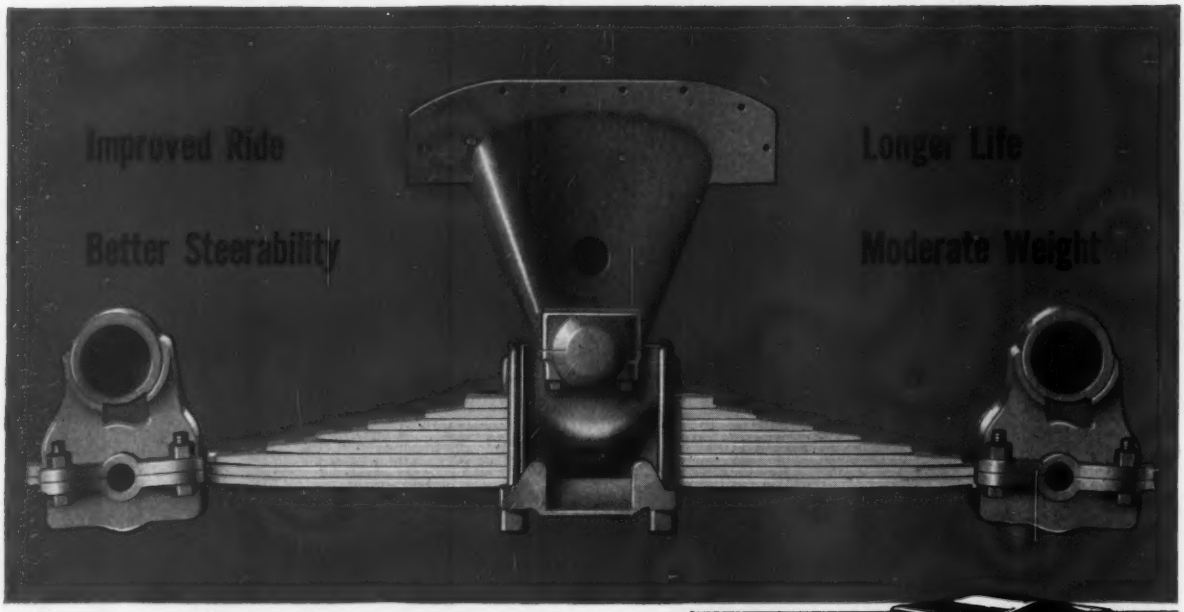
NOW IT'S ALL EATON!

A NEW TANDEM SUSPENSION



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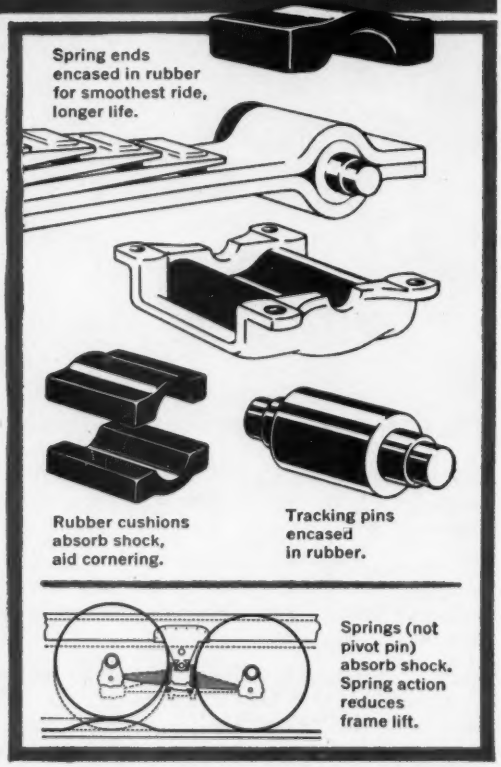
This new Eaton suspension takes full advantage of tough, resilient rubber at all points of movement. The result: a smoother ride (loaded or empty), long trouble-free service, more payload and easy, quick servicing when required.

Springs are long, widely spaced with variable rate. Spring ends have rubber cushions and bushings. Rubber inserts between spring leaves reduce interleaf friction. Rugged tracking pins are suspended in rubber. All these mean more driver comfort, more cargo safety, longer equipment life on or off the highway.

Drive and alignment are through **two** main leaves and tracking pin. No lubrication is required.

Ask your truck dealer for complete details on the new Eaton Tandem Suspension, or write us direct.


Spring ends encased in rubber for smoothest ride, longer life.
Rubber cushions absorb shock, aid cornering.
Tracking pins encased in rubber.
Springs (not pivot pin) absorb shock. Spring action reduces frame lift.

EATON AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND 10, OHIO

...Your partner in progress through research...

Circle 52 on Reader Service Card

CONSTRUCTION BUSINESS . .

continued from page 50

was contingent on the sale of bonds to finance the project. Two attempts at selling the bonds failed. But Turnpike Authority chairman William F. Callahan isn't giving up. Neither is Gov. John Volpe giving up his position that favors a freeway from Weston to Boston.

SOME BIG CONTRACT AWARDS OF THE MONTH

S.S. Silberblatt, Inc., New York, N.Y. Franklin D. Roosevelt houses, Manhattan Boro. New York Housing Authority. $10,044,000.

Cayuga Construction Corp. and Johnson, Drake & Piper, Inc., New York, N.Y. Section 13, Sixth Ave. subway. New York Transit Authority. $7,931,000.

Perini Corp., Framingham, Mass. Water treatment plant. Monroe County Water Authority, Rochester, N.Y. $5,547,500.

Rea Construction Co., Charlotte, N.Y. Hospital. Forsyth County. Board of Commissioners, Winston-Salem, N.C. $5,887,700.

Frank J. Rooney Construction Corp., Tampa, Fla. Fifteen-story Skyway Bridge Towers Apartments, St. Petersburg, Fla. Radice Construction Corp., White Plains, N.Y. $5.6 million.

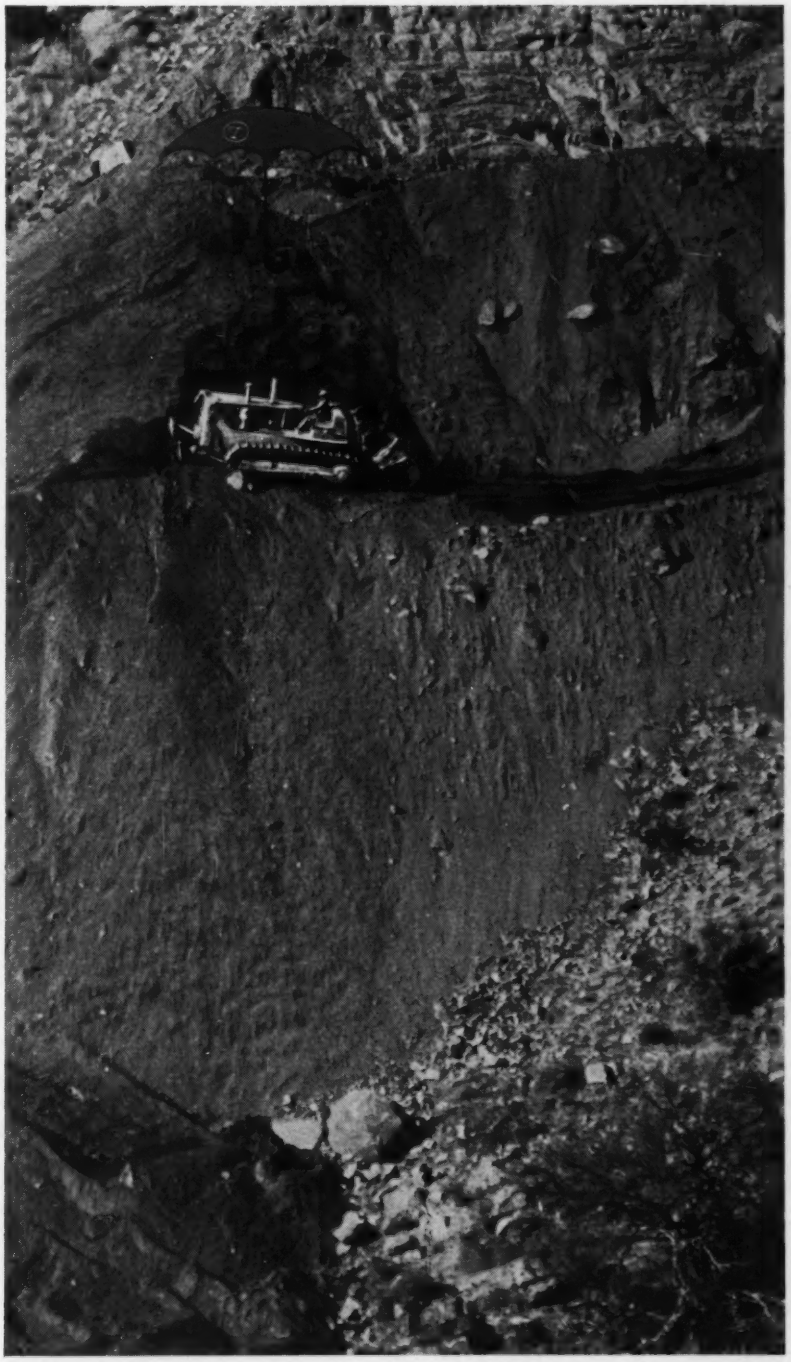
Perini Corp., Framingham, Mass. Civic Center courts building, Rochester, N.Y. Rochester Civic Center Commission. $7,281,000.

Manhattan Construction Co., Mobile, Ala. Hospital in Mobile. Mobile General Hospital, Mobile, Ala. $6,465,000.

Terminal Construction Corp., Wood-Ridge, N.J. Baychester houses, Bronx Boro, N.Y. New York City Housing Authority. $4,063,000.

Contex Co., Dallas, Tex. Capehart housing, Base Procurement Office, Fort Crook, Neb. $8,190,154.

continued on page 54



Follow that 'dozer! Wherever your equipment goes—the Travelers umbrella protects it. A Contractors' Equipment Floater from Travelers covers your equipment in transit or at any location in the event of an accident. And Travelers provides fast claim settlements, too, to save you money by cutting your down time: 4300 Travelers claim people work in 287 locations across the country to make sure your equipment gets back on the job fast. For practically any kind of business insurance or bonds you may need—Builders' Risk, Workmen's Compensation and Public Liability, Contractors' Equipment Floaters—talk to your Travelers man.

THE TRAVELERS Insurance Companies HARTFORD 15, CONNECTICUT

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Protection
THAT'S GUARANTEED
Comfort
THAT MAKES WORK EASIER
Long Wear
THAT SAVES MONEY

GOODALL QUALITY . . . that's the reason why so many construction men prefer work clothes and footwear carrying the Goodall label. Made in a variety of materials and styles, to meet every requirement under all conditions of work and weather.

Write for catalog, or contact our nearest branch for samples and prices.

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Manufacturers of Mechanical Rubber Products—Since 1870

Standard of Quality HOSE • BELTING • FOOTWEAR
CLOTHING • EXPANSION JOINTS • PACKINGS • LINERS, ETC.

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches and Distributors Throughout the United States and in Canada

Circle 54 on Reader Service Card

CONTRACTS AWARDED . . .

continued from page 53

Griffith Co., Los Angeles, Calif. For 4.8 mi. on San Diego Freeway in Los Angeles County. Califorina State Div. of Highways, Los Angeles. $10,987,901.

John McShain, Inc., Baltimore, Md. Children's medical and surgical center, Baltimore. John Hopkins Hospital, Baltimore. $9,759,000.

Sheehan Pipeline Construction Co,. Tulsa, Okla. For 428 miles of gas gathering system in Panhandle. Transwestern Pipeline Co., Houston, Tex. $5,067,000.

American Construction Co., Washington, D.C. 12-story office building, Washington, D.C. International Bank for Reconstruction and Development, Washington. Estimated cost $6 million.

J. H. Findorff & Sons, Inc. Madison, Wis. Hill Farm State Office, Madison. Wisconsin State Public Buildings Corp., Madison. $4,713,907.

Humphreys and Harding, Washington, D.C. Terminal building at Dulles International Airport, Chantilly, Va. Federal Aviation Agency, Washington, D.C. $7,934,500.

Walter Kidde Constructors, Inc., New York, N.Y. Hospital addition at St. Elizabeth's Hospital, Elizabeth, N.J. $5,343,000.

Turner Construction Co., New York, N.Y. Seven-story addition. Nazareth Hospital, Philadelphia, Pa. $7.8 million.

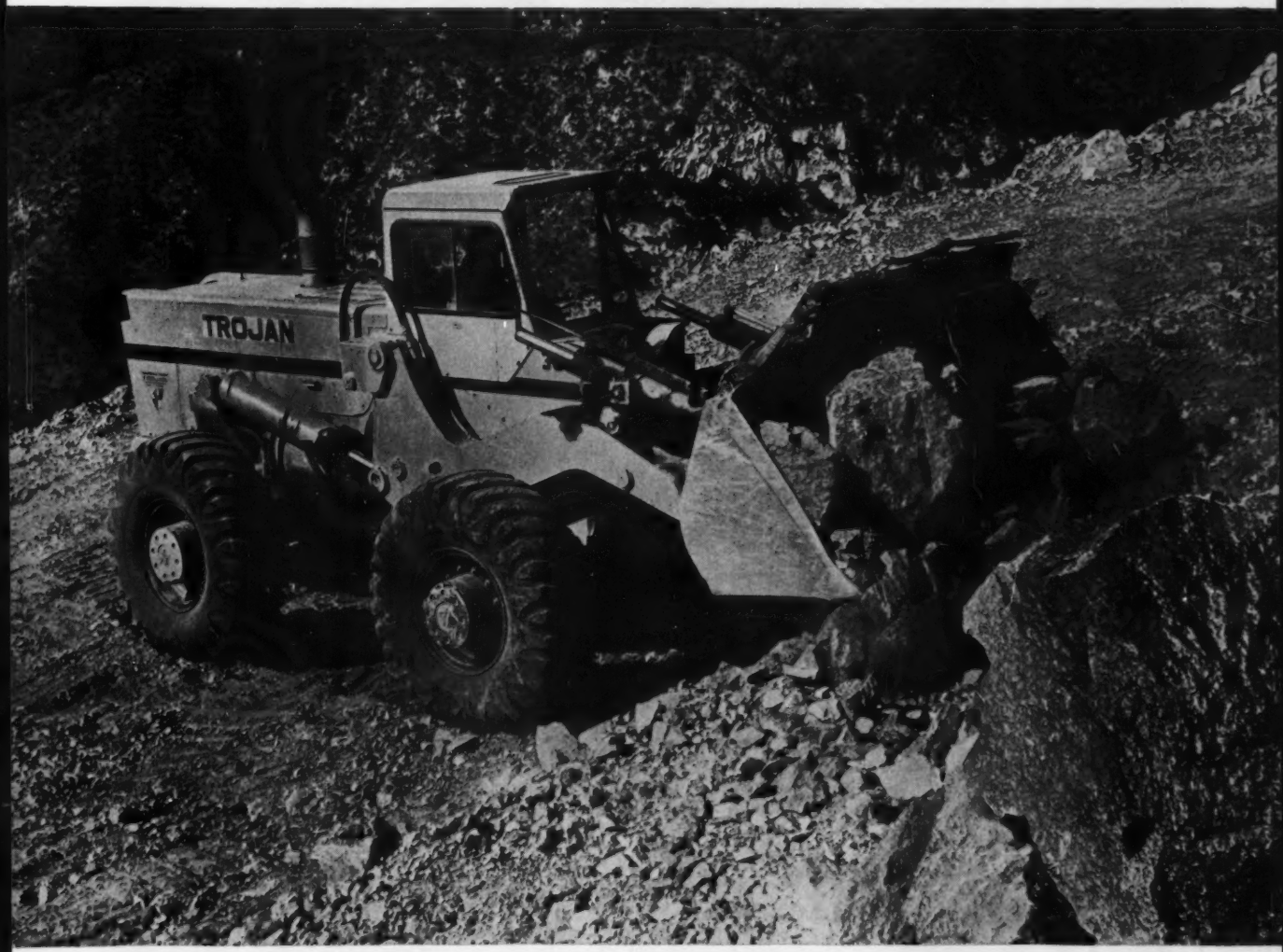
Baylor Construction Corp. and Brookfield Construction Co., New York, N.Y. Low bidders on Hunts Point pollution control project, Bronx Boro, N.Y. Department Public Works, New York. $6,123,250.

Colorado Constructors and A. S. Horner, Denver, Colo. Lemon Dam and road, Florida Project. Bureau of Reclamation, Denver. $5,820,807.

Corvetta Construction Co., Chicago, Ill. Hospital, Chicago. St. Joseph's Hospital. Estimated cost, $10 million.

continued on page 57

On a narrow ledge in the High Sierras, pinned between a 750-ft. sheer drop and a 500-ft. wall of solid granite, this 3 yard Trojan, Model 304, has handled over 173,000 yards of blasted material on the 6 mile Angeles-Crest cut-off while leased by the California State Highway Department . . .



. . . Under the most precarious working conditions, this machine has loaded an average of 130.8 cu. yds. per hour during 1,324 hours of operation with less than 2% down-time. Records of one 11 day work period showed the Trojan handling 1,691 loads — one every 2.8 minutes — for a total of 9,546 cu. yds. Trojan's cost per yard was $0.1122, as compared to $0.5051 per yard for the entire operation . . . Trojan's extra wide tread and long wheel-base were among the many features contributing to the efficient, sure-footed performance on this difficult project . . . Your local distributor will gladly demonstrate these and the many other extra values built into every Trojan model.

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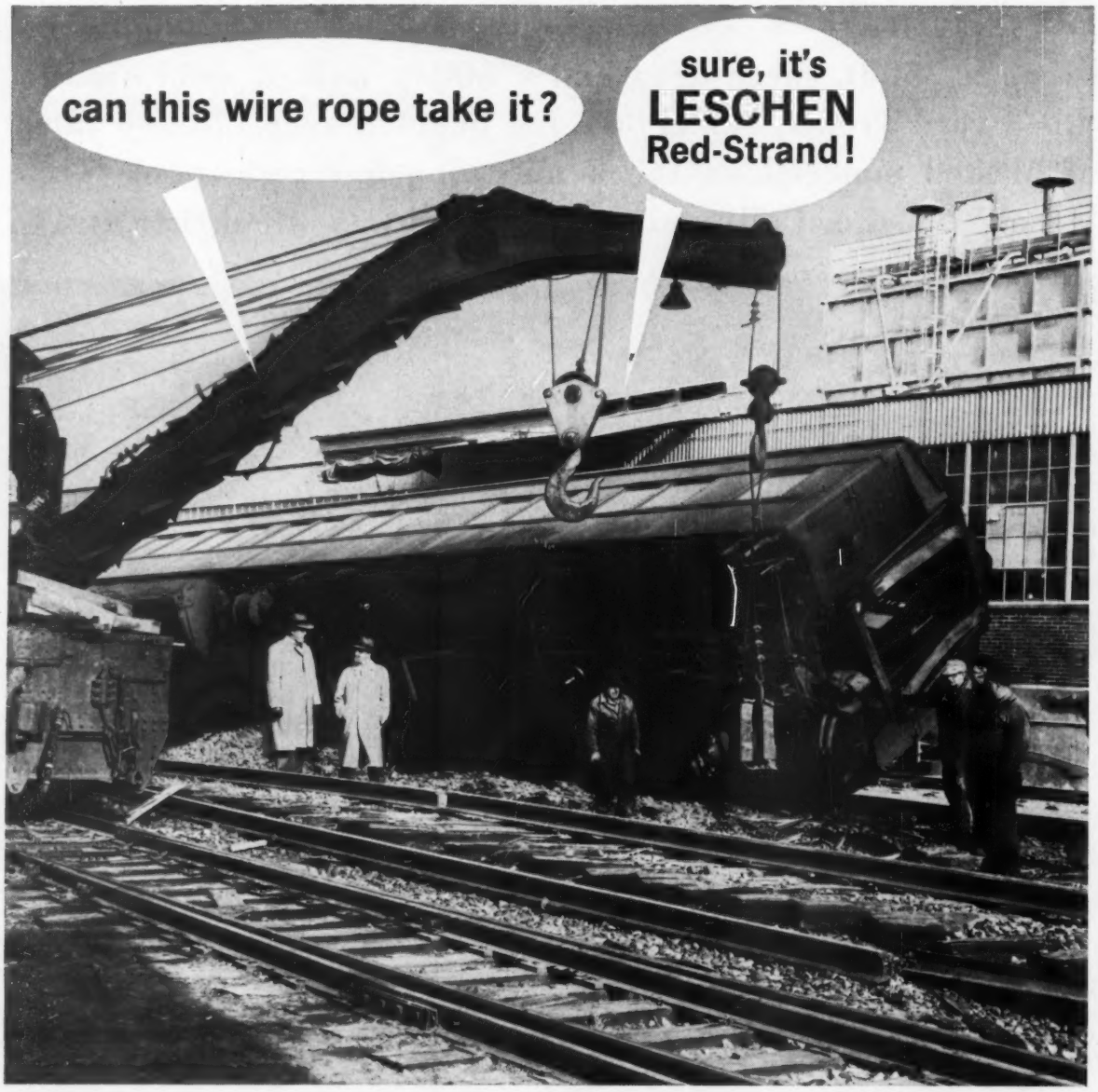
TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

Circle 55 on Reader Service Card



You are on the right track here. For the big lifts or ordinary loads Leschen Red-Strand is universally accepted and demanded by wire rope users who expect and get their money's worth. • Constant research and development have provided Leschen users with a complete range of sizes and types for every conceivable task. This versatility, backed by Leschen's distribution and technical services, is your assurance of wire rope dependability for every job. • *Accept nothing less than Leschen.* For the name of your nearest Leschen distributor write: Leschen Wire Rope Division, H. K. Porter Company, Inc., 2727 Hamilton Avenue, St. Louis 12, Missouri.

PORTER ***LESCHEN WIRE ROPE DIVISION***
H. K. PORTER COMPANY, INC.

Circle 56 on Reader Service Card

CONTRACTS AWARDED...

continued from page 54

American Bridge Division, U.S. Steel Corp., Houston Tex. Low bid for superstructure for Sunshine Toll Bridge over Mississippi. Ascension and St. James Bridge Authority, Donaldsonville, La. $12.9 million.

Donelson Builders Inc., Columbus, Ohio. Resort community at Sugar Grove, Ohio. Hide-a-Way Hills Co., Columbus. Estimated cost, $8 million.

Gust K. Newberg Construction Co., Chicago, Ill. Stage 4, Robert R. Taylor Homes. Chicago Housing Authority. $14,747,00.

Peter Kiewit Sons Co., San Francisco, Calif. Four-lane bridge to replace San Mateo-Hayward bridge. State Div. San Francisco Bay Toll Crossings, Calif. $13,278,590.

C. J. Langenfelder, Baltimore, Md. Christina River interchange projects, New Castle County, Del. Delaware State Highway Dept., Dover, Del. $12,977,429.

Perini Corp., Framingham, Mass. Water treatment plant, Rochester, N.Y. Monroe County Water Authority, Rochester. $5,547,500.

Joseph Rugo, Inc., Dorchester, Mass. Low bidder for hospital, Lakeville State Sanitorium. Commonwealth of Massachusetts, Department of Public Works, Boston. $5,188,000.

Stolte, Inc., Oakland, Calif. County Administration Building, Oakland. County of Alameda. $4,389,000.

M. DeMatteo Construction Co., Quincy, Mass. Section of Interstate Rt 495, Chelmsford, Mass. Commonwealth of Massachusetts, Dept. of Public Works, Boston. $4,037,874.

Thomas M. Madden Co., Chicago. Section on South Route Expressway. Illinois State Division of Highways, Springfield. $4,229,763.

Peter Kiewit Sons Co., Omaha, Neb. Minuteman missile facility, Elsworth Air Force Base, Rapids City, S. D. Corps of Engineers, Ballistic Missile Construction Office, Los Angeles, Calif. $56,220,274.

Will Never Owe You Anything!

Your OWEN Clamshell Bucket starts making money for you from the first hefty mouthful it bites off... and keeps on making money because its rugged construction "stands up". It's the bucket with "The Big Bite that's Just Right!"

The OWEN has a strong appetite for work—an appetite that is never satisfied. These are exclusive features that keep it working for you:

Block and Tackle Type Reeving **Recessed Lips**
One-piece Head Construction **Single Main Shaft**
Riveted Bowl Assembly

Prompt service through ample inventory on new equipment and parts.

Write for OWEN information on how these features can make money for you.

The OWEN
BUCKET COMPANY
BREAKWATER AVENUE • CLEVELAND 2, OHIO
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Circle 57 on Reader Service Card

From a profit-minded Wisconsin gravel producer—

6 unusual money making ideas

Unusual* proven *ideas, you might say. For Wesley Peterson, owner, Gillett Cement Products, Gillett, Wisconsin, has been working on them and refining them, proving and improving them ever since the war.

Michigan Tractor Shovels dig pit-run, eliminate blasting

Let's take his pit operation first. Three good ideas here. Michigan *digging power* accounts for two of them. Both the company's 4-year-old Model 125A and their two newer Model 175A's have the breakout force *to eliminate blasting*. Rarely, in fact, need a machine use non-loading passes to loosen the gravel material. Three scoops of a 2¾ yd Model 175A bucket heaps a 10 yd hauler. Time, 1½ minutes. The 2¼ yd Model 125A needs only four scoops, 2 minutes.

Strip rocky clay overburden

The Michigans also strip overburden. Part of this is *bucket-dozed* over a bank, part is picked up and carried. Carrying constitutes a major production advantage where any distance is involved, according to Mr. Peterson, and is one of the reasons he prefers a Michigan Tractor Shovel over a dozer for this work. Speed is another reason . . . for example, on one recent job, one Michigan stripped an acre, *up to 12 ft deep*, in three days!

Truckers load own trucks

Another major saving has been instituted by Mr. Peterson at his portable crusher. When there's lots of work to be

done here, Mr. Peterson details one of his 14 employees as Michigan operator. *But usually, the machine is operated by each individual truck driver as he comes into the pit for a load.* "Michigans, with their power steer, power shift (no clutch) and torque converter, are easy for almost anyone to run well," says Peterson. His third Michigan is stationed at the material yard where it loads customer and company trucks, hauls sand for ready-mix, dresses stockpiles, etc. Letting each driver handle his own load may slow production slightly at peak periods . . . *but* the specialized operators normally needed—and, as Mr. Peterson points out, *definitely required* on a crawler-loader or crane—can be assigned other work.

Do spare-time jobs for extra profits

Michigan speed and flexibility have given Mr. Peterson another big advantage. To fill slack periods, even of only

a few hours, the company actively solicits local businessmen, farmers and towns for those small jobs that build extra profits. Charges return a good income to the owner, yet are reasonable to the buyer. Including travel time and operator, Mr. Peterson gets $15 per hour for either his gas-operated 127 hp Model 125A Michigan or his 133 hp diesel-powered 175A—$18 per hour for his newer, more powerful 162 hp turbo-diesel 175A.

Dig basements

Probably the most-frequent "custom job" is digging basements. "In our part of the country, with material varying from hard clay to sand, Michigans are ideal for this work," says Owner Peterson. Typical basement—30 x 40 x 6 ft. deep—takes 3 to 5 hours. This includes time to strip and pile topsoil, also to carry and spread excess material in low spots (if any). Michigan leaves neatly-finished sides, say contractor renters. Little hand work is needed.

Remove trees, stumps

Another interesting—and unusual—Michigan job has been clearing land. To reach one such task, on the hospital grounds in Oconto Falls, 10 miles away, took the self-powered Michigan less than 30 minutes. At work, the Michigan cleared brush, dug out stumps, even pushed over trees. Where trees are no larger than they were here, 1½ ft in diameter, operator simply raises bucket, rests it 8 to 9 ft up on the trunk, and moves forward. Four-wheel-drive topples the tree quickly, root ball and all. On other jobs,

such as one in the town of Gillett where trees averaged 3 ft and more in diameter, the versatile Michigan digs around the root, *then* pushes the trees over.

Plow, remove snow

Even in the severe winters of northern Wisconsin, Mr. Peterson keeps his Michigans working. He has, for example a contract with the City of Gillett for removing snow from the main street of this community of 1,500 people. Other times, the Michigans plow parking lots and farm driveways. Standard bucket equipment is currently being used on all three units, but Mr. Peterson is investigating purchase of the quick-detach "Wisconsin Special" one-way and V-type snow plows recently made available for Michigans . . . also a larger bucket for loading snow (many choices, from 3 cubic yards up, are available through his Michigan Distributor, Aring Equipment Company). Other quick-detach attachments are available too: snow-blowers, crane hooks, fork lifts, street sweepers, backfiller blades, root rakes, etc.

Michigan is a registered trademark of

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
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Circle 59 on Reader Service Card

WHEN MOTOR OIL FLOWS THROUGH THIS NEW FRAM "WEAR-GUARD" OIL FILTER

UP TO 40% MORE ENGINE-KILLING SLUDGE IS TRAPPED!

Tests using radioactive tracer techniques proved it! An exclusive scientific breakthrough in the construction of new Fram "Wear-Guard" Oil Filters traps up to 40% more sludge than any other filter tested. Give your engines this extra margin of safety. You'll find a type and a model of Fram "Wear-Guard" Filter to meet all your operational requirements. Fram Corporation, Providence 16, R.I.

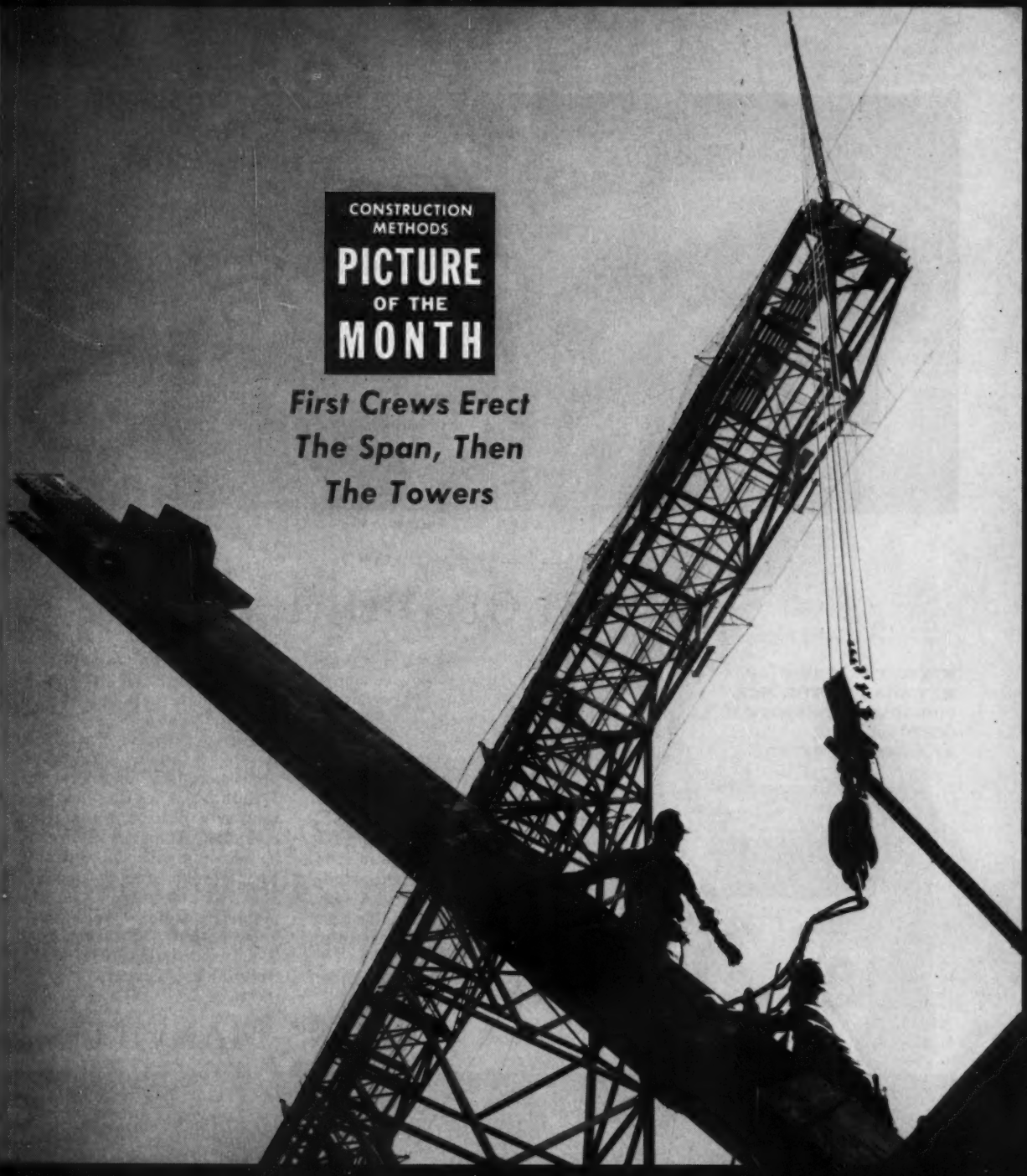
FRAM
"WEAR-GUARD"® FILTERS

Circle 60 on Reader Service Card

CONSTRUCTION METHODS

PICTURE OF THE MONTH

First Crews Erect The Span, Then The Towers



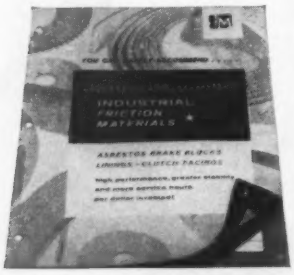
• Above, a 10-ton welded plate section for one of the two towers that will support the Thomas Creek Bridge in Oregon is delivered 300 ft below the cantilevered trusswork to a Bethlehem Steel Co. crew waiting at the footing. Because of the tough terrain, it was impossible to get steel to the bottom of the canyon for the towers and falsework. Instead, the bridge is being erected by moving a stiffleg and crew along the steel truss span until the bridge

is cantilevered above the location of the next falsework or tower footing. Then, steel for the towers is carried out on the span by a rail-mounted materials car and lowered to the bottom of the canyon by the stiffleg. Photo at left shows a falsework tower being erected as the 30-ft-deep truss span cantilevers 106 ft from another falsework tower. All steel for the structure was fabricated at Bethlehem's Seattle works. The bridge will take 1,728 tons.

MOLDED *J-M Facing Segments being riveted to a swing friction member.*

Woven or molded?

WHICH FRICTION MATERIAL DO YOU PICK FOR LOWEST OPERATING COST-PER-HOUR AT MAXIMUM EFFICIENCY?



New J-M Frictions Selection Guide helps you get the answer in seconds!

Selecting friction materials is a complex matter. How do *you* go about picking the right one? Many styles are available, yet only one will give you safest operation, peak performance and longest service life for a particular application.

With success or failure hinging on correct selection, the new J-M Frictions Selection Guide can be of great service to you. Every figure in it is based on detailed performance studies. All sixteen pages are loaded with specific design data in simplified table form. You will find it accurate, informative and easy to use.

Whether you require a disc, cone, band, block or lining...for use in wet or dry service, light or heavy duty, slow or high-speed operation, under heavy or light service . . . this book will give you performance characteristics, available sizes and shapes, dimension data and tolerances.

Both J-M Sales Engineers and Authorized Distributors are friction specialists. Their advice on any problem dealing with the control of motion is yours for the asking. For your free copy of FM 35A—Friction Materials Guide – write to Johns-Manville, Box 359, New York 16, N.Y. In Canada, address Port Credit, Ont. Cable: Johnmanvil.

JOHNS-MANVILLE

WOVEN *J-M Cone Facing being applied to a power take-off unit.*

Circle 62 on Reader Service Card

HAZARD WIRE ROPE

Cage Bros. Construction Company finds:

Increased service more than offsets the slightly higher cost of VHS

SAN ANTONIO, TEXAS — Leslie Massey, General Superintendent of Cage Bros. Construction Company believes in keeping a close eye on costs—especially wire rope costs. Here's what he has to say about the comparative costs of Improved Plow Steel cable versus VHS (Very High Strength) cable. "We've used both kinds of rope on DW-20 scrapers and D-9 dozers. I'd say VHS gives us 30% to 50% more service than IPS. When you can increase wire rope service this much with VHS, it more than makes up for the slightly higher price you pay for it. And, of course, it cuts downtime, too."

What is VHS? What will it do for you?

- It's 15% stronger than Improved Plow steel
- It's tougher, more resistant to wear
- It stands up better on scrapers, dozers, shovels and draglines—the rough work
- It cuts the number of rope replacements

Your nearby Hazard Wire Rope distributor can give you immediate delivery of LAY-SET VHS in the size and construction to meet your requirements.

ACCO

Mail Coupon for FREE Wire Rope Recommendation Booklet

Hazard Wire Rope Division
American Chain & Cable Company, Inc.
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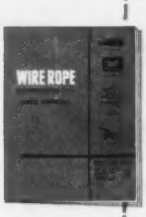


Please send me the FREE Hazard Wire Rope Recommendation Booklet listing the right diameter, construction, lay and grade of wire rope to use for over 50 general contracting jobs.

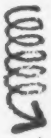
Name _____

Company _____

Address _____

City _____ Zone ____ State _____ CM

Circle 63 on Reader Service Card

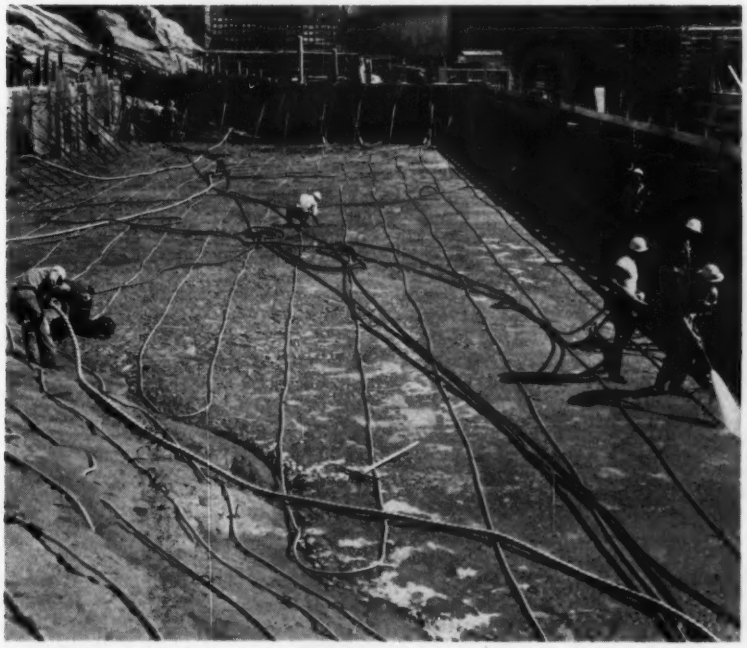
If it rolls on an axle or turns in a bearing or rides on a shaft if it slides in a groove or moves on a pivot if it bores  or cuts or transmits pressure one of Sinclair's 500 specialized lubricants is designed to make it work better.

Sinclair

SINCLAIR REFINING COMPANY 600 Fifth Ave., N.Y. 20 N.Y.

Circle 64 on Reader Service Card

Construction News in Pictures . . .



Miles of Tube

Workmen at Glen Canyon Dam on the Colorado River place some of the 900 mi of aluminum tube that will carry cold water to remove heat from the concrete. Later, the tubing will be filled with grout and left in the dam. Subcontractors National Mechanical Contractors are laying the Alcoa tubing. Five million cu yd of concrete will be used in the 710-ft-high dam.

Lock's Blocks

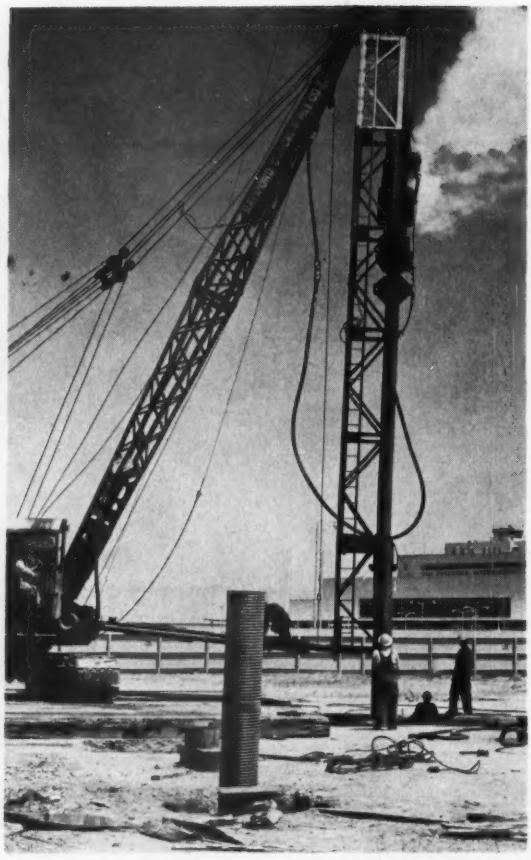
At the Walter F. George Lock on the Chatahoochee River, gantries pour concrete for blocks that will rise 140 ft. An 85-ft-tall Washington gantry, in center of lock, works with the 40-ft American Revolver behind it. Placed in 5-ft lifts, the monoliths are 100 ft wide at the base, narrowing to 8 ft at top. Perini Corp., Framingham, Mass., is contractor on the project.

Slung Roof

Heavy steel cables support precast concrete roof members at the Dulles International Airport, Chantilly, Va. The roof is suspended from 32 reinforced concrete main frames that also carry the main floor slabs. The frames rise 65 ft above the floor on one side and 42 ft 8 in. on the other. Contractor is Corbetta Construction Co. of New York City.

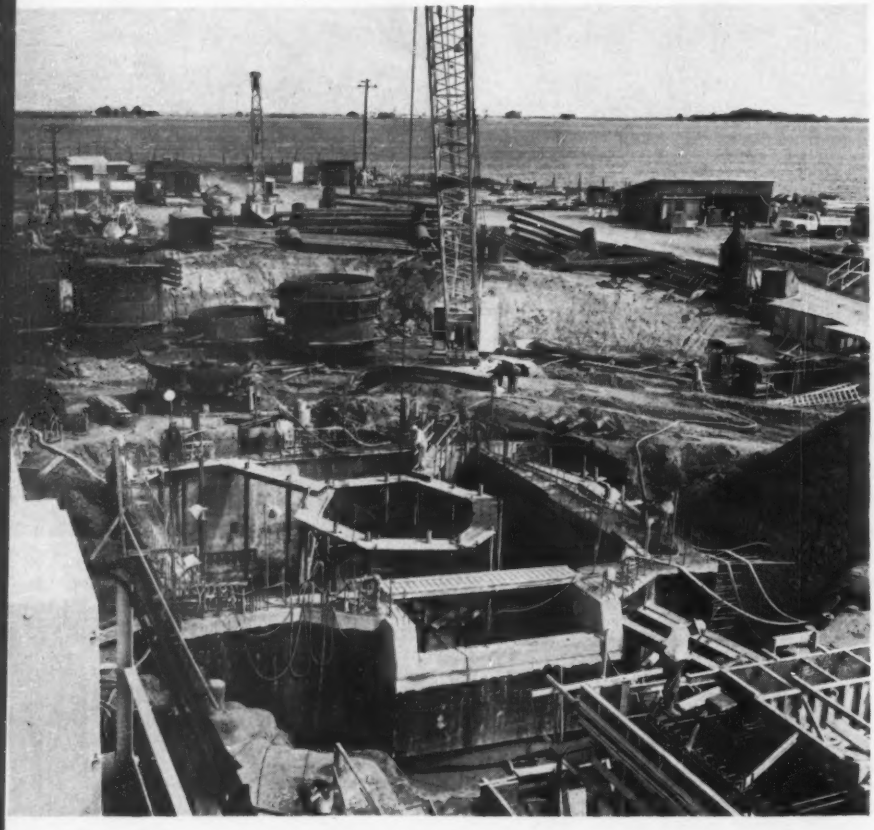
Big in Bighorn

In the Bighorn National Forest of Wyoming, 660,000 cu yd of rock, limestone, and sandstone are moved during the relocation of 7 mi of U.S. Highway 14. A Northwest shovel is shown loading a LeTourneau-Westinghouse 27-ton truck. Contractor is MacGregor Triangle.



Two-Stage Piledriving

This steam-powered rig is driving piles in two stages for a new terminal at San Francisco International Airport. First, the rig drives a 12¾-in.-dia, 58-ft-long Kaiser pipe pile, then Raymond Concrete Pile Co. attaches a 48-ft-long tubular shell to the top of the pipe pile and completes driving it.



Deep Caisson

An 85-ft deep caisson for Pacific Gas & Electric's Humbolt Bay nuclear power plant was sunk by gravity. J. H. Pomeroy Co., subcontractor for Bechtel Corp., first set a steel cutting edge in a 17-ft excavation. Concrete forms were built above the cutting edge. Pressured water and air cleared the underside of the caisson as it sank.

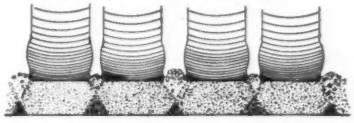
How Contractor Cut Base Compaction Costs On Interstate Paving Job

Seaman Duo-Pactor compacting gravel base to eight-inch thickness. Note that correct spacing of tires practically eliminates material displacement.

Four contractors on adjoining sections of an Interstate Highway paving job were required to compact granular base to eight inch thickness, 95% of modified Proctor. One* decided to try *Duo-Paction* on this type of lift, as previously he had used his three Seaman Duo-Pactors for compaction of fills, embankments, and for haul road maintenance.

Tests soon convinced both contractor and the engineer that *Duo-Paction* produced greater density throughout full depth of lift, at great time saving. Once again the Duo-Pactor had proved its ability to handle every phase of compaction, from fill to finish, at considerable cost reduction to the contractor.

Faster, lower-cost compaction results from Duo-Pactor design employing the principle of *Duo-Paction*—combined pneumatic and steel rolling in one machine.



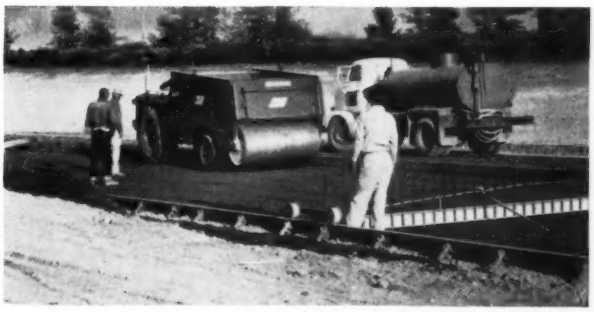
Correctly-spaced tires minimize material displacement, thus reducing the number of passes needed to obtain specified densities.

Correct spacing of the Duo-Pactor tires confines materials and minimizes displacement, thus developing higher, more uniform densities in fewer passes than with widely spaced tires. This is one reason why the Seaman Duo-Pactor has conclusively proved its ability to obtain uniform, high density compaction not only on fills and embankments, but also on subbase or base materials and stabilized surfaces, at *immense savings in man and machine hours*. Uniform density is further assured by lowering the steel roll, forcing ridged material down between the compacted tire tracks, while smoothing and leveling the surface.

From coast to coast, Seaman Duo-Pactors have job-proved their ability to meet the most rigid density specifications while saving up to 75% in man-hours and up to 50% in equipment cost, on all types of compaction, from fill to finish.

Duo-Pactors are available in sizes with ballast variable from 7 to 20 tons, 9 to 27 tons, and 10 to 30 tons. In addition, compressive pressures can be varied by on-the-go, hydraulic adjustment of the wheel base. The 10-30 RD model is equipped with dump body for quick ballast adjustment or for use as a highway or off-highway materials hauler.

There's a Seaman Duo-Pactor that matches your exact job requirements. Write today for specification sheets!



Working between the forms, this Seaman Duo-Pactor compacted four-inch gravel base just ahead of the paving crew.

**A certified contractor report from Seaman Corporation files.*

Please send me Specification Sheets as checked below:

- ☐ 7-20-ton Duo-Pactor
- ☐ 9-27-ton Duo-Pactor
- ☐ 10-30-ton Self-dumping Duo-Pactor
- ☐ 8-20-ton Tri-Pactor
- ☐ 10-27-ton Tri-Pactor
- ☐ Pull-type Vibratory Impactor
- ☐ Self-Propelled Vibratory Impactor
- ☐ Utility 6-yd. Scraper
- ☐ Bituminous Distributors
- ☐ Street Flushers

SEAMAN-GUNNISON DIVISION OF SEAMAN CORP. MILWAUKEE, WISC.—U.S.A.

P.O. Box 3025, Milwaukee 18, Wis., U.S.A.
Tel.: SUnset 1-8900

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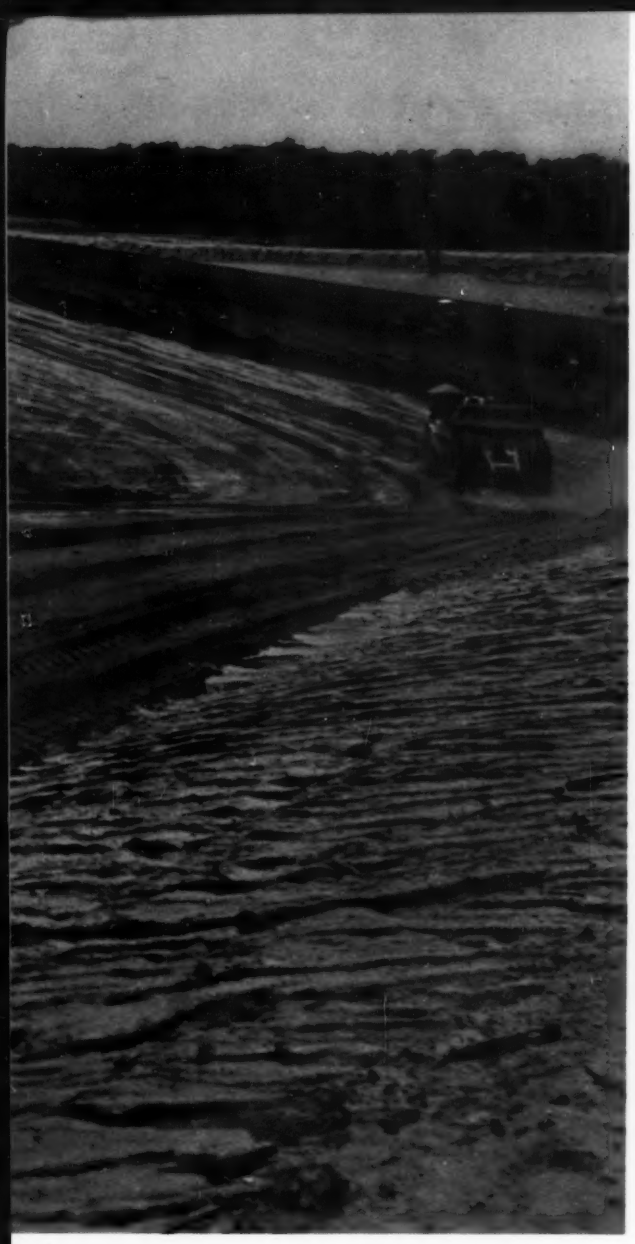
Contractor on $60 million dam improves with just three Gulf lubes . . .

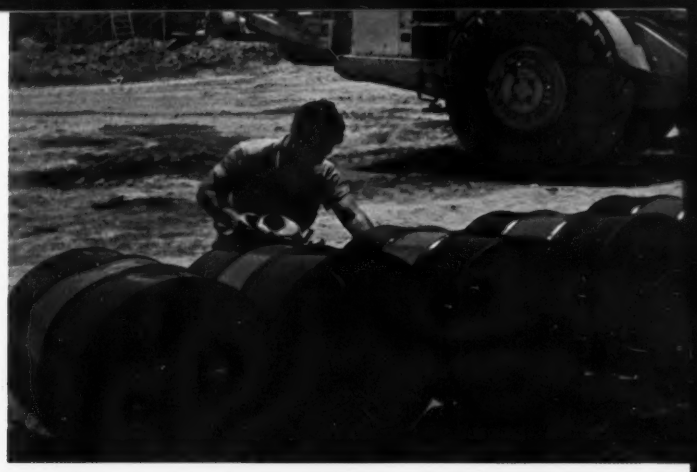
When McGee Bend Dam, Jasper, Texas, is completed, it will form the largest lake in the state (114,500 acres, 560 miles of shoreline). The mammoth earthen dam will be 19,430 feet long and rise 120 feet above the Angelina River.

Cosmo Construction Company, Houston, Texas, has already completed river diversion work and is now working on a part of the dam itself. The former required removal of 330,640 yards of unclassified material. The latter calls for moving 1,600,000 yards of selected fill.

The simplified lubrication program developed for all equipment on this project requires only three Gulf lubricants, plus a hydraulic oil. Adoption of this program has resulted in lower lubricant handling costs, elimination of application errors, and improved maintenance.

Gulf Super-Duty Motor Oil is used as crankcase oil for all equipment. Mr. Charles Kirl, Project Superintendent, tells why, "We've been inside a couple of engines to check on their condition and were pleased to see how clean they were." The other





Fuel and lube storage is located near access road that runs between borrow pit and dump area.

Left to right: T. H. Chambers, Gulf Representative; Charles Kirl, Project Superintendent, and Ray Baldwin, Gulf Distributor, discuss results of simplified lubrication of equipment used in project.

◀ Two scrapers climb access road on way to borrow pit. The dam will stretch better than 19,000 feet across this valley.

maintenance
GULF MAKES THINGS RUN BETTER!

Gulf lubricants are: Gulflex® A for wheel-bearings; Gulf Multi-Purpose Gear Lubricant for transmissions, differentials and power takeoffs. Gulflube® Motor Oil H.D. is used for hydraulic systems.

Cosmo uses clean-burning Gulf diesel fuel for maximum power and long engine life. This high quality fuel also helps to keep filters, tanks and injectors free from harmful deposits.

Gulf products can help you get the most from your equipment with lower maintenance costs. May we have the opportunity to prove it on your next project? Just contact your nearest Gulf office for a quotation. For helpful maintenance tips, and information on Gulf products write for a copy of the "Contractors' Guide."

GULF OIL CORPORATION
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NEW economy | NEW safety | NEW efficiency

ON ROUTE DELIVERIES ALL-NEW 'Jeep' FLEETVAN

Payload	1,000 pounds
Engine	Hurricane, 4 Cyl. F-Head, 72 hp.
Wheelbase	81 inches
Overall Length	154 inches
Load Space Volume	170 Cu. Ft.
Interior Height Rear Load Area	62½ inches
Length of Load Area	87½ inches
Interior Width Load Area	57 inches

Here's the newest, most economical walk-in delivery van you can buy—the sensational new 'Jeep' Fleetvan. Ideal for multi-stop delivery use! The Fleetvan parks easy. Maneuvers easy. New safety-designed front lets the driver see the road just a short way in front of the bumper. And the Fleetvan gives top gas economy too. These are just a few of the reasons the U. S. Post Office purchased over 6,000 'Jeep' Fleetvans. For full information on the 'Jeep' Fleetvan write to Mr. R. J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.

'Jeep' FLEETVAN ®

WILLYS MOTORS, INC., TOLEDO, OHIO. ONE OF THE GROWING KAISER INDUSTRIES

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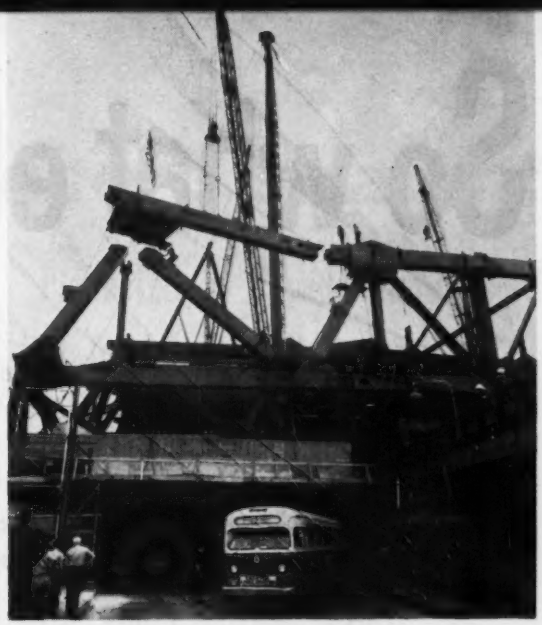
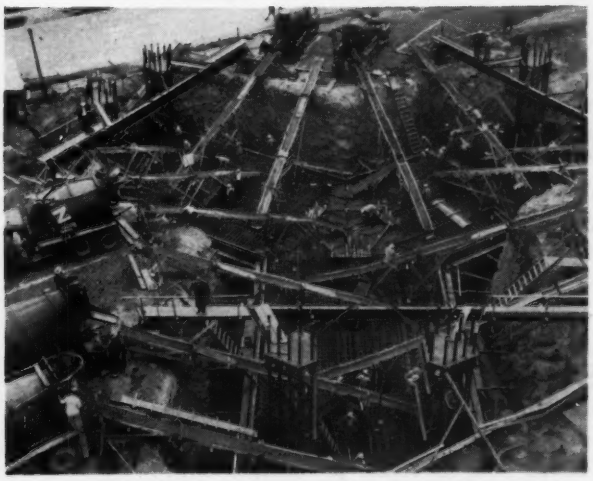


Business as Usual

The buses keep running, about 6,200 of them a day, as work continues on the three-story parking facility atop New York City's Port Authority bus terminal. In photo above, the last of 15 200-ft-long trusses that rest on 22-ton columns is being placed. Photo at left shows the trusses spanning the existing terminal, next to the 34-story McGraw-Hill building. Steel was erected by the Harris Structural Steel Co., New York.



Pour Takes 16 Hours

The biggest continuous concrete pour in Pacific Northwest history, 2,800 cu yd over 16 hr, was required for the foundation of Seattle's Century 21 Space Needle. In 35-ft deep hole, above, 250 tons of steel reinforcing bars and 72 steel anchor bolts were installed by Bethlehem Steel Co. Contractor is Howard S. Wright Construction Co.

Cells Form Cofferdam

Interconnected steel sheet pile cells under construction on the Monongahela River will form a cofferdam for two 84x720-ft river locks near Brownsville, Pa. In the foreground of the photo, left, is a wooden template used as a guide for driving the piling. The 2100-ft long, 32-cell cofferdam is being built by Dravo of Pittsburgh.

So what else is new?...

Many "new" features and components now being announced in the latest models of crawler tractors, scrapers and other earthmoving equipment have been standard equipment in Euclids for years. Developed, pioneered and improved by Euclid, these job proved features have been cutting costs and providing bonus production for "Euc" owners long before competitive manufacturers adopted and announced them as their own product improvements.

FULL-POWER SHIFT Euclid's first use of power shift was in "twin power" models in 1946; has been a feature of all torque converter rear-dumps, scrapers and bottom dumps since that time; "standard" on all "Euc" crawlers since 1954 . . . 15 years of field experience!

HYDRAULIC SCRAPER OPERATION bowl, apron and ejector operation of Euclid scrapers has always been hydraulic . . . even those models built prior to World War II utilized hydraulic lever action . . . basic hydraulic design of current models was first announced in 1948.

PLANETARY DRIVE a Euclid feature on rear-dump and bottom-dump haulers since the middle 30's, on all "Euc" self-propelled machines that have been introduced since, including scrapers and crawler tractors.

ALL-WHEEL DRIVE Separate engines, torque converters and semi-automatic transmissions for each of 2 drive axles have been used in "Euc" Rear-Dumps and "Twin" Scrapers since 1948 . . . overhung engine scrapers with power on all four wheels were introduced in 1954.

UNITIZED ASSEMBLY AND SERVICE ACCESSIBILITY

Ease of servicing, as compared with competitive machines, has always been a design feature of "Eucs" . . . since 1946 all torque converter models have utilized a converter-transmission "package" that saves time for repair or replacement . . . Euclid crawlers are designed to save hours of labor by making it easy to service all major components . . . engine, radiator, transmission, drive sprocket, final drive, etc. can be replaced in far less time than on any comparable tractor.

Only EUCLID offers all of these features . . .
and they've been standard for years!

EUCLID

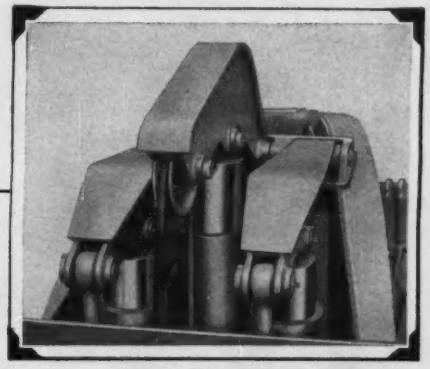
DIVISION OF GENERAL MOTORS, HUDSON, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

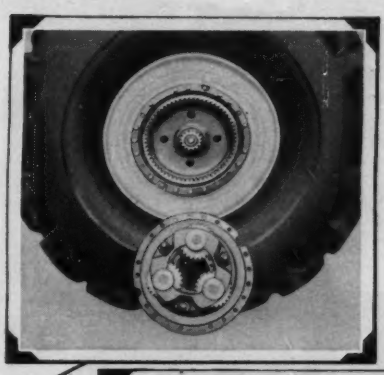
just to set the record straight!

Pioneered by Euclid, many of today's "new" features in earthmoving equipment have been providing bonus performance to "Euc" owners for years . . . the record speaks for itself!

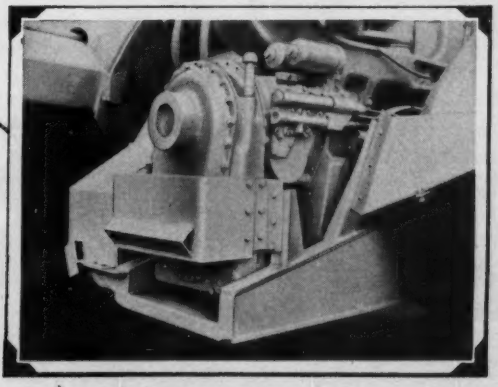
new in 1946!



new in 1948!



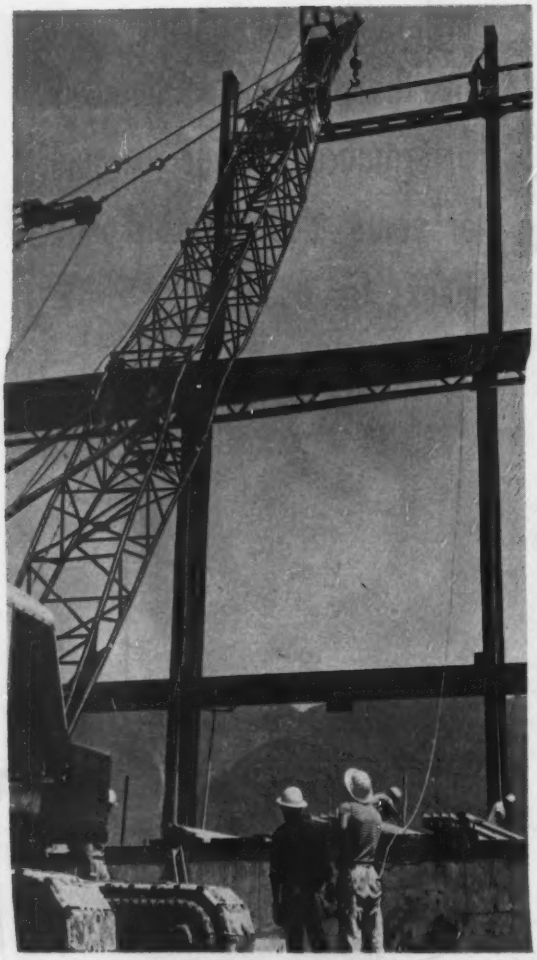
new in middle '30's!



Torque converter-transmission "package" new in 1946!

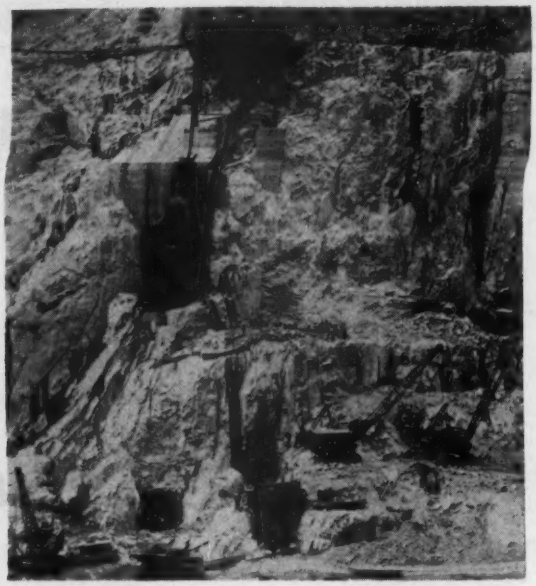
new in 1954!

Construction 'Round the World...



In Brazil

A 50-ton Lima crane is erecting structural steel for the soaking pit building at a steel plant at Piacaguera, near Santos. The plant will have an annual capacity of over 500,000 ingot tons. Local subcontractors are working on the Cosipa project, with Kaiser Engineers International, Inc., providing the technical assistance.

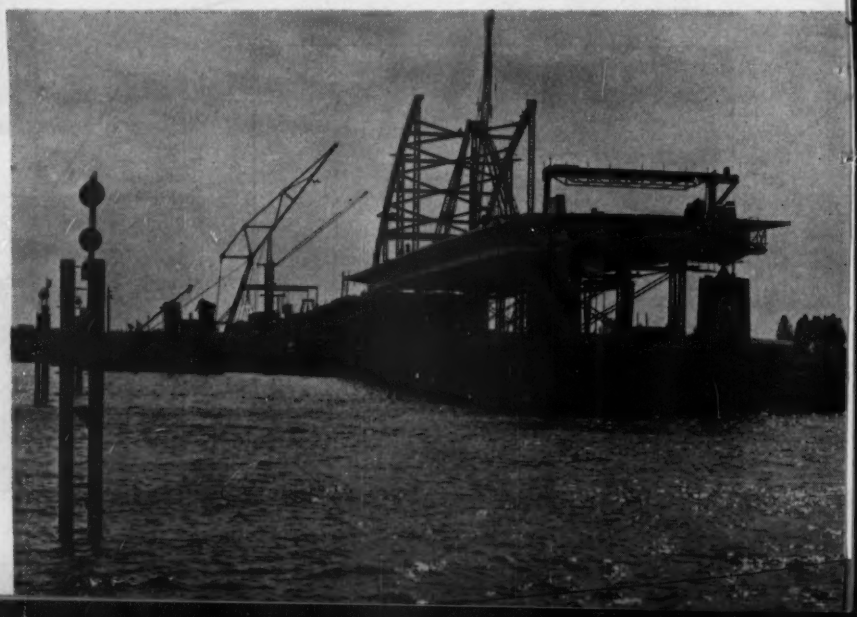


In Thailand

The $100-million Yanhee Dam on the Ping River will be 508 ft high and use 1.3 million cu yd of concrete. Equipment, including six Northwests in photo, is brought to the remote site in trucks and barges. The contractor on the project is Brown & Root-Utah.

In Holland

Prestressed concrete piles and Prepakt concrete are being used to support the bridge between Amsterdam and Antwerp. After dredging, sheet piling and piles are driven from a templet. Gravel is placed in the cofferdam, and mortar intruded through 1¼-in. pipes for the layer of Prepakt. Over 10,000 cu yd were placed in this way.



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From Cows to Cars in Boston Common

Owner: Massachusetts Parking Authority; George Lewis Brody, Chairman
General Contractor: The Foundation Company, New York, N. Y.
Pumping Contractor: American Dewatering Corporation, Rockaway, N. J.

Boston Common is historic ground. Massachusetts was but a colony when this land was set aside in 1634 for a "trayning field" and the "feeding of cattell". For many years both Colonial troops and cows were customary sights on the Common.

During the Revolution the Common became a rallying point for patriots, and it has continued to be a meeting spot for free men and a center for free speech. Many great celebrations have been held here. Folks long forgotten, and folks long to be remembered, alike have made use of the Common.

Now the Common is entering a new era of use. Upon its site the city is building an underground garage which will provide parking space for thousands of the cars that enter Boston daily. To enable work to be done efficiently and "in the dry", Moretrench wellpoints keep 31 feet of water under constant control.

The Common's surface has been removed only temporarily, and when the garage is roofed over, trees, shrubs and turf will be restored to their original places. The Common will continue to have its familiar and historic look. It will only have deepened in its use to people.

Pumping is our business. You profit from our experience when you work with Moretrench — in the dry.

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In heavy equipment on all kinds of construction jobs, the Lipe TC Clutch delivers full torque capacity *for the entire life of the friction material!*

As friction disc facings wear through normal use, Lipe's exclusive toggle-lever linkage keeps efficiency high . . . maintaining torque capacity for *maximum* periods.

Both manufacturers and owners of heavy equipment are turning to the TC for this and other cost-reducing qualities: easier on driveline components . . . easier to maintain . . . less down time . . . lower over-all operating expense by mile, hour or year!

In *any* on- or off-highway heavy-duty service, make performance prove to you that

LIPE DELIVERS IN THE CLUTCH

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Construction Methods AND EQUIPMENT

SEPTEMBER, 1961

VOLUME 43 • NUMBER 9

HENRY T. PEREZ, Editor

Prequalification Works

ALMOST ALL state highway departments require prequalification of contractors bidding on road jobs. The others generally ask low bidders for some evidence of qualifications prior to contract award.

These are prudent practices. They are designed to insure that a state receives an acceptable project on or before the specified completion date. And they can save the unqualified contractor the bootless expense of preparing a bid that would be thrown out anyway.

Usually a contractor's qualifications are based on his financial resources, the equipment he has available, his current work load, and his past experience. These can be cut-and-dried statistics. But trouble sometimes arises in the evaluation of them.

It is in this evalution that the authority judging the qualifications must have the wisdom of a Solomon. On the one hand, it wants to eliminate the extra inspection and supervision by highway department personnel that an unreliable contractor requires. On the other hand it must be careful that bias does not creep into its evaluation. Prequalification must not be used as a means of lessening competition by arbitrarily preventing competent new firms, or companies moving into new areas, from bidding against oldtime, local outfits.

Prequalification can be made to work successfully. O. H. Fritzche, chief engineer of the New Jersey State Highway Dept., makes that clear in an article in AASHO's "American Highways." Since the department started the practice 30 years ago, it has prequalified 1,265 applicants. And of a total 1,666 contracts let to 424 construction outfits during that 30-yr period, there were only four failures. Three of these jobs were finished by bonding companies, the fourth by the surviving member of a joint venture.

But, according to Fritzsche, *"all methods of prequalification place too much stress on financial responsibility and too little stress on how efficiently the contractor performs his work. To the* [highway department] *man on the job and to the individual states, it makes little difference that a contractor has unlimited cash resources if during the course of the project continual conflict or twice the inspection force is required to obtain a respectable product."*

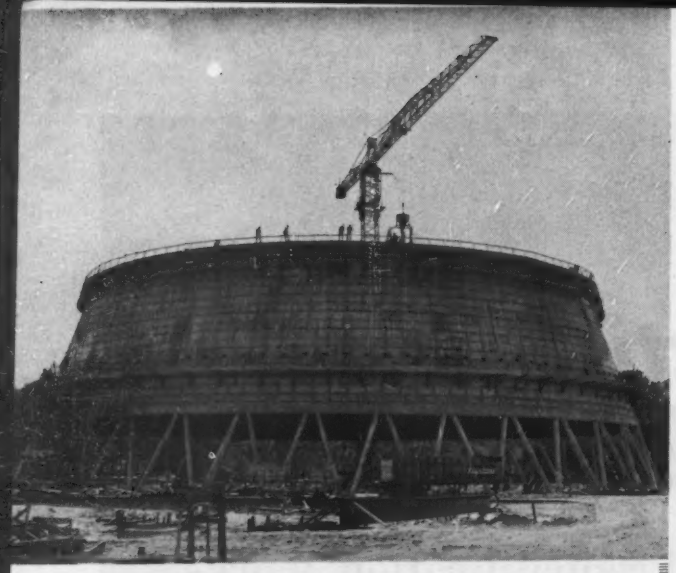
What Does This Symbol Mean?

The above seal of the Audit Bureau of Circulations, which has appeared on our masthead since 1928, means that you—the reader—are the boss of this magazine. It signifies, among other things, that you have paid cold, hard cash for a subscription to *CONSTRUCTION METHODS.*

In accepting your subscription payment, we also take on the responsibility for supplying you with editorial material that will be helpful to you in your work.

ABC verifies our circulation and makes sure that the audience we are writing for is, in fact, reached. And with this paid circulation pinpointed, manufacturers can tailor their advertising messages to show how their products can help you do a job better, faster, or at less cost.

So, the ABC symbol is a mark of quality and value. We are proud that it has been on our masthead continuously for 33 years.



To build this country's first natural-draft cooling tower, the American contractor is using British designs and forming methods and a French tower crane.

Leapfrog Forms

By JOHN SILINSH
Assistant Editor

FORMS AND WORK PLATFORMS hang on concrete and eliminate the need for conventional scaffolding during construction of a 320-ft-high hyperbolic shell that will be this country's first natural-draft cooling tower.

Two sets of specially designed forms move up in leapfrog fashion as the self-supporting shell rises. The forms also hold steel frames with work platforms that are raised as the forms move up.

The contractor, The Marley Co. of Kansas City, Mo., is constructing the tower in 3-ft lifts. As one set of 3-ft-deep forms holds concrete placed earlier, a lower set is stripped and erected above it. Because concrete must cure for at least 24-hr before stripping, the rate of progress is restricted.

The cooling tower was designed by L. G. Mouchel & Partners of London, who also serve as consultants during construction. When completed, the tower will process 120,000 gpm of water at the Big Sandy generating station of the Kentucky Power Co., a part of the American Electric Power System.

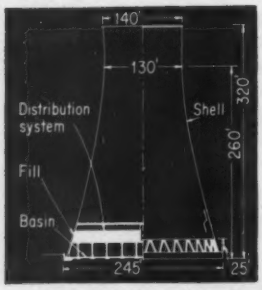
All forms and scaffolds were fabricated by the contractor. The steel form panels and scaffold supports were fabricated in Marley's shops in Louisville. Timber for work platforms was cut and drilled by Marley's carpenters in Kansas City and assembled at the job site.

One set of forms consists of enough panels to form both the inside and outside surfaces of the shell for one lift of concrete. The panels are held in place by 6-ft-long vertical timbers, or gores, that also hold special bars for adjusting the curvature of the shell.

Notched brackets attached to the forms hold the scaffolds in place. Scaffold sections are 4½ ft wide and carry two work platforms 6 ft apart vertically. They provide access to four lifts at the same time. The lowest lift is completed; the next higher lift is stripped and coated with a protective bituminous

EMPTY TOWER—The hyperbolic cooling tower is an empty shell supported on inclined columns around its base. During construction, a tower crane pours concrete, places steel, and lowers scaffolds. The crane runs on tracks on the floor of the tower.

Hyperbolic Towers—a New Trend?



A new and lucrative field for contractors with concrete construction know-how will be opened up if hyperbolic natural-draft cooling towers catch on in the U.S.

The country's first such tower is under construction at a generating plant near Louisa, Ky., and engineers say many others will be built.

A natural-draft cooling tower is an empty hyperbolic concrete shell supported on inclined columns at the base. The tower is designed to produce air currents without the aid of mechanical equipment. Because there is no complex mechanical or electrical equipment to be installed, any contractor with sufficient concrete know-how can handle the job.

Natural-draft cooling towers have enjoyed wide popularity for years in Europe, Africa, and Asia, and more than 500 are in operation today. Towers built to date range in height up to 340 ft with a base diameter of 265 ft. At the Kentucky project, the tower will be 320 ft high and 245 ft in dia (see sketch).

In operation, cool air will enter the tower between the columns at ground level where it come into contact with warm water. The water will heat the air and make it rise, and this action will draw in more cool air. A piping system near the bottom of the tower will distribute incoming warm water over the entire tower area and a grillage system—an internal stack—will break up the water into small drops to speed cooling.

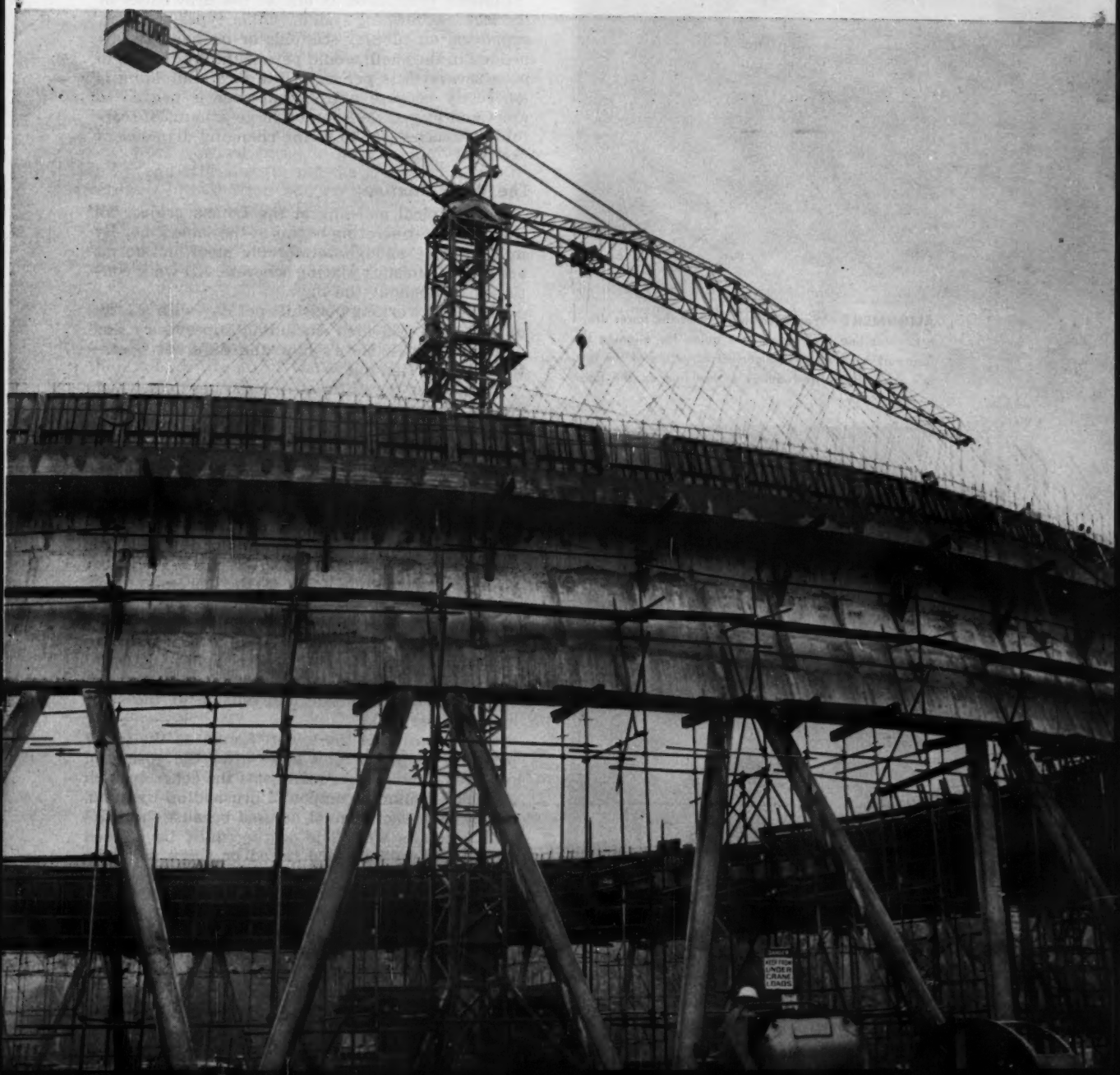
Like all other natural-draft cooling towers, the shell of the Kentucky tower will be hyperbolic, although a cylindrical shell would work just as well. Because the cross section of the warm air mass will decrease as air rises, a shell that fits the hyperbolic shape of the air mass is more economical. It will take less concrete during construction and when completed it will be better able to resists wind forces.

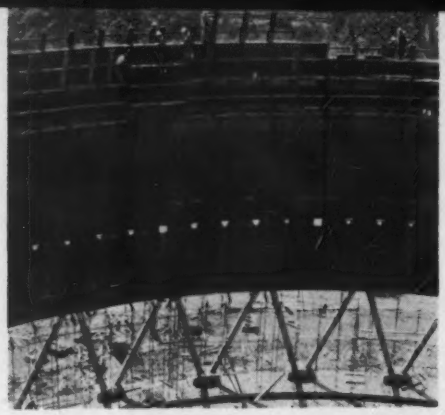
Natural-draft cooling towers generally are made of concrete, and nearly all are poured in place. Precast construction has met with little success, although several British, French, and Belgian builders are trying to develop practical methods of erecting precast towers.

Forming is the costliest part of erecting a poured-in-place cooling tower.

Many types of formwork have been tried on hyperbolic shells. Most popular is a leapfrog technique in which forms stripped from one lift are used to form a higher lift while forms in an intermediate lift hold scaffolds and green concrete. The leapfrog forming method, which is detailed in this article, is utilized at the Kentucky project.

Shape 320-Ft Hyperbolic Tower





FORMING—Work crews place forms for a new lift as soon as the previous lift is concreted. As the formwork moves up with the shell so do the work platforms which hang on forms. They require no conventional scaffolds.

ALIGNMENT—Worker on the floor of the tower draws a circular line that serves as a guide for aligning the formwork to establish the correct curvature of the tower's shell. Each lift requires a new line on the floor.

PLUMBING—A plumb bob dropped from the work platform shows which way forms must be shifted. Man on the ground signals the adjustments to a man at the forms who shifts them so plumb bob hits line on floor.

Forms Hang on Concrete As Tower Rises

compound; the third lift holds the scaffolds in place, and the top lift is formed.

After concreting, the scaffolds are moved up and hung on the forms that hold the fresh concrete. Men with a block and tackle move up one scaffold section at a time.

As the shell goes up and its diameter decreases, form panels and scaffold sections are dropped out and it takes less and less time to form and pour a lift. Because the curing time and the forming system limit production to one lift per day, Marley evens out the operation by reducing the work force as the shell diameter decreases.

Limited production is one of the drawbacks of the leapfrog forming system. Other types of forms, supported on tubular scaffolds or on hangers imbedded in the shell, would permit the contractor to pour several lifts per day. But such scaffolding is too costly because extra manpower is needed to erect and dismantle it, and a large amount of scaffolding is necessary to fit the changing diameter of the shell.

The Work Routine

On a typical morning at the Louisa project all work except concreting begins at the same time. By mid-morning enough reinforcing steel and forms are in place to start placing concrete. All work continues throughout the day.

Marley is working one shift per day with a force of less than 100 men, including supervisory and office personnel. Here's how the different operations are carried out:

Ironworker crews tie all reinforcing bars which run in three directions. Two are inclined to match the slopes of the inclined columns at the base of the tower and one is horizontal around the circumference of the shell. The bars are ½ in. in dia at the base of the tower and are spaced equally in all directions.

Forming crews follow right on the heels of the ironworkers, and several operations go on at the same time. Several men place the gores. They also insert bolts through holes in the gores and add spacers at the top to maintain the thickness of the shell.

Other men on the lower work platform strip the forms and pass them up to the higher platform. Here the forms are cleaned and coated with form oil. Crews on the inside and outside of the shell handle these tasks.

On the inside of the tower, a man on the lower platform plugs the bolt holes after the gores are removed, and another man coats the concrete with a black bitiminous compound brushed on by hand. Spray equipment cannot be used because the scaffold is in the way. The coating must be applied before the scaffolds are raised or there won't be any access to the shell. The outside of the shell is left untreated.

When the form panels are cleaned and oiled, men position them on top of the forms that hold the previous lift. Pins inserted through panel flanges and gores hold the forms in place. Other

Concrete Crews Pour Shell in 3-Ft Lifts

crews take care of adjusting the curvature and inserting wedges to fill gaps caused by the changing diameter of the shell.

To keep concrete from leaking out of the forms, the horizontal flanges of the panels are bolted together. For the same reason, the edges of the gores are sealed with steel strips that close the gaps between the gores and the panel flanges. Because of the steel strips, wedges in the gaps do not have to make a tight seal; they only make the formwork rigid so that it will hold the proper curvature.

Workmen insert the wedges and bolt the horizontal flanges of the forms. To make it easier to adjust the diameter of the shell, special wooden form panels, or bulkheads, are inserted in each lift. As the diameter decreases, steel panels are dropped out and the bulkheads fill the odd gaps.

To permit accurate adjustment of the shell's curvature after the forms are in place, a special steel angle is attached to each gore. The angle, which is nearly 6 ft long, is attached to a gore by one bolt. A wood block is inserted between the lower end of the angle and the gore, and a bolt is screwed into the top end of the angle, with the end of the bolt resting against the gore.

The angle acts as a lever. By turning the bolt, the gap between the angle and the gore is adjusted until the form is at the proper slope.

The curvature of the formwork is established by plumbing it from a circle drawn on the floor of the tower. A man on the floor checks the alignment and signals the necessary adjustment to a man on the scaffold. He turns the bolt in the top of the angle until the plumb bob hits the line on the floor.

Concreting is next. The mix is placed by a Record tower crane with a ½-yd bucket. Concrete is designed for a slump of 3 to 4 in. It contains Sika Plastiment densifier and Sika Aer air entertaining agent. All concrete for the cooling tower is produced by a small, fully enclosed plant at the site.

Cement is delivered by truck and aggregates come in by rail and are fed to the plant by a clamshell on a Sargent truck crane. Binanbatch hoppers and scales measure out the cement and aggregates which are mixed in a Thoro Mix concrete mixer.

The batches then are dumped into a Kal-Truk self-propelled concrete buggy that takes the concrete into the tower. The buggy rides up a loadramp so that it can dump its load into the bucket on the tower crane.

A short elephant trunk under the bucket directs the mix into the forms. In addition, the concreting crew uses small chutes to help direct the concrete.

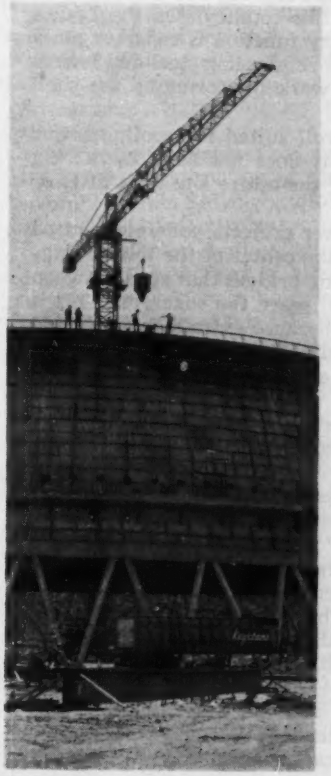
The elephant trunk is directed at the chutes that are moved along the forms as the bucket swings around the shell. A backup board that fits on top of the form panels keeps the concrete from spilling over the forms. The back-up boards are moved along the forms as concreting progresses.

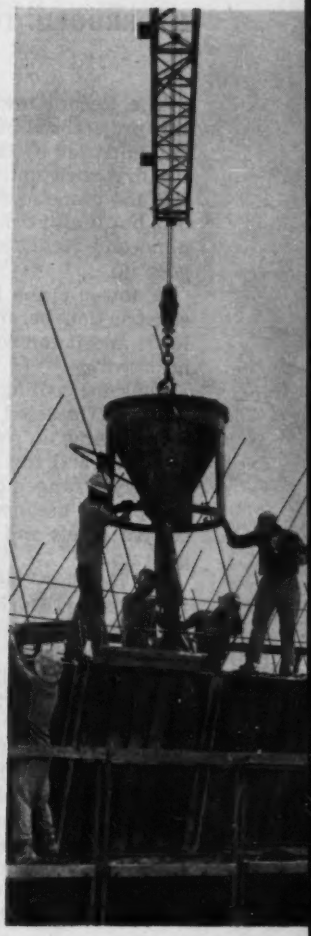
During concreting, the crew first fills the forms partially and then comes back and fills them to the top. This procedure keeps the high-slump concrete from flowing too much and segregating.

continued on next page

CONCRETE PRODUCTION—A small, fully enclosed plant at the job site produces ½-yd batches, and a self-propelled Kal-Truk buggy hauls them to a loading ramp in the tower and dumps them into concreting bucket.

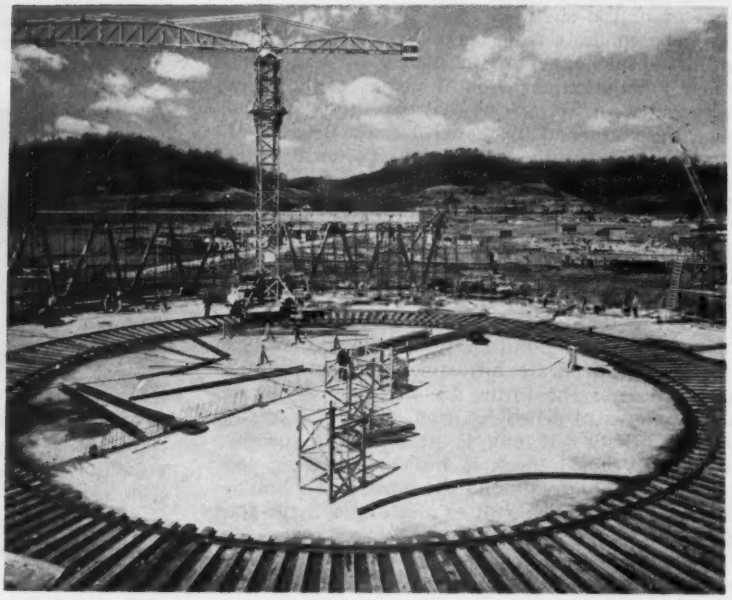
CONCRETE PLACING — Short elephant trunk on the concrete bucket and small chutes that are moved along the forms guide the concrete mix into the narrow space between forms.





Tower Crane's Mast Extends as Shell Rises

MATERIALS HANDLING—Tower crane with 99-ft boom handles steel and places concrete. During early work it rides on circular tracks; later it will be taken off the tracks and placed in tower's center.



HYPERBOLIC TOWER . . . *continued*

The Record tower crane handling materials on this project was built by F. Potain & Co. of France and imported by Briere Corp. of New York. This is the first such unit in this country. On the Louisa job, the crane's primary function is concrete placing, but it also handles reinforcing steel and lowers unneeded forms and work platforms as the shell goes up.

A tower crane is well suited for cooling tower construction because it does not have to lift big loads and it can cover the entire site with little or no moving.

On some cooling tower projects, concrete is lifted by a hoist erected in the center of the tower. Buggies running on rotating bridges that span between the hoist and the shell place the concrete. This is a costly arrangement because extra manpower and equipment are needed to lift the bridges to successive levels and to extend the hoist as the shell goes up.

On this job, the Record tower crane is working in two ways. During construction of the lower portions of the shell, the crane rides on a circular track inside the tower. Maximum reach of the crane's boom is 99 ft, but the cooling tower has a maximum diameter of 250 ft at the base. Placing the crane on tracks extends its reach to cover all parts of the shell. On tracks, the crane can operate safely with a maximum mast height of 134½ ft. The tracks are 14 ft 9 in. apart and the crane's undercarriage has the same wheelbase dimension.

For work above 134½ ft, the mast must be anchored to a structure and the tracks become useless. When the shell reaches that height, the crane will be taken off the tracks and placed in the center of the tower. From there it will handle materials for the top portion of the 320-ft-high shell. Working radius will not be a problem because the shell's radius will be less than 99 ft at that height.

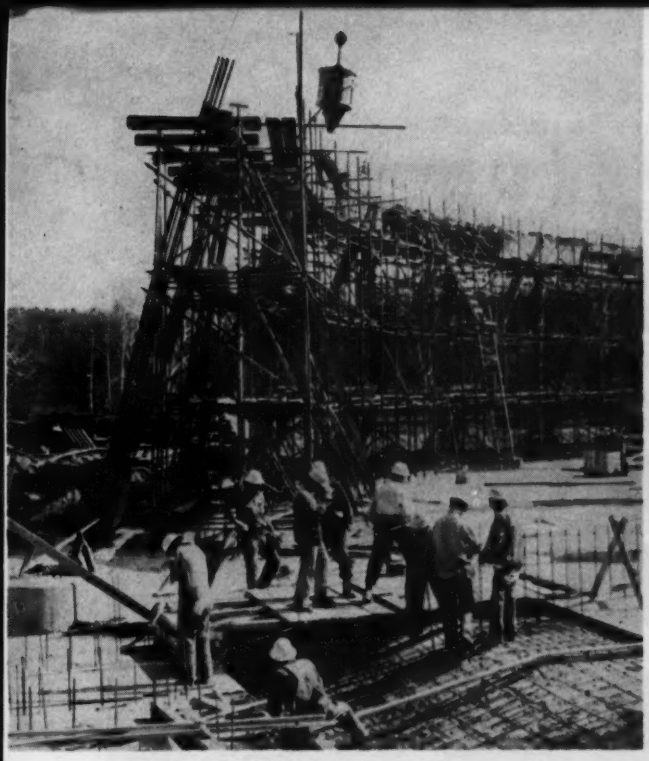
Maximum working height for the Record 707 crane is 330 ft when it is anchored to a structure. Maximum safe working load is 6,600 lb at a radius up to 44 ft. Lifting capacity at 99 ft is 2,688 lb.

When the crane is in the center of the tower and anchored to the shell, it will also be used for taking measurements to establish the correct curvature of the shell because plumbing from that height will be inconvenient.

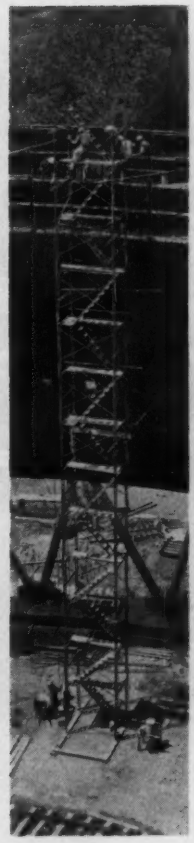
The crane's mast consists of sections 5 ft 3 in. square and 7 ft 7 in. high. To extend the mast they are lifted into position by the crane itself and fastened to the mast with special bolts. It takes about one hour to add a mast section. The top of the crane is equipped with a special frame and hydraulic jacks that raise the tower head above the topmost mast section so that a new section can be inserted.

To extend the mast, the crane first lifts a section to the level of the tower head where a short monorail holds the section until it is ready to be bolted into position. Next, the tower head is unbolted from the topmost mast section, and the jacks raise the head so the new section can be moved into position by the monorail.

In position, the new section is bolted to the mast and the tower head is bolted to the top of the new section. Making the connections is easy because special bolts, supplied by the manufacturer, also serve as drift pins. The bolts have a shank diameter that is larger than the thread diameter so that



TUBULAR SCAFFOLDS—Formwork for columns at the base of the tower and a ring girder atop the columns is supported on Patent tubular scaffolds which were removed after shell was started.



Stairs Shift To Fit Shell

MOVABLE STAIRWAY—Tubular scaffold frames mounted on skids support an access stairway for personnel. Chain hoist moves the stairs toward the center of the tower as the diameter of shell decreases.

they can be used to align the holes without damaging the threads.

When a new section is bolted to the mast, the crane can either telescope again so another section can be added or it can be put into service by bolting the tower head atop the new mast section. The reverse procedure is used during disassembly.

When the crane is left unattended at night or on weekends, the slewing mechanism must be disengaged to prevent damage by storms. During strong winds, the jib acts as a weather vane and always points into the wind. This keeps the area exposed to wind forces to a minimum. It can withstand winds up to 100 mph.

The crane was set up at the beginning of the job as soon as the concrete floor for the cooling tower was completed. All steel and concrete, even for the inclined columns around the base of the tower, were placed with the crane.

Concreting the inclined columns was somewhat of a chore because they contain a lot of reinforcing and are 25 ft long. And they must be concreted in one continuous pour. Because the columns are inclined along the shell and also slant toward the center of the tower, Marley fabricated special steel forms to keep bracing to a minimum.

A set of forms consisted of four sections. One was 25 ft long and was used to form the underside of a column. This full-length form section also provided support for three 8-ft-long sections that formed the top half of a column.

At the start of concreting, the bottom form section and only one 8-ft section at the base of the column were in position. When this part of the column was concreted, another 8-ft section was added and concreted, and the same procedure was repeated once more. To prevent honeycombing, the concrete was vibrated thoroughly during placing.

A ring girder was constructed on top of the columns, and then the shell was started. Forms for the ring girder and the column were held in place by Patent tubular scaffolds. But once the leapfrog forms were started, Marley removed the tubular scaffolds.

The only tubular scaffolding that remains at the site during construction of the shell is a stairway assembled from Safway scaffold frames. The stairway is mounted on planks that serve as skids on the tower's floor. As the shell rises and its diameter decreases, the stairway is skidded toward the center of the tower. A chain hoist hooked to the crane's tracks takes care of this job. As the stairway is extended, it is tied to the shell by brackets inserted in the concrete.

With this equipment and procedure, Marley has been able to make good progress. In spite of the complicated construction, the tower will contain only 6,000 yd of concrete when completed.

The work force will be reduced as the tower diameter decreases because forming will take less time, and separate crews will not be needed on the inside and outside of the shell to stay ahead of concreting.

As the shell rises, communications become more difficult, and Marley's key personnel have resorted to using Duo Com 100 two-way radios made by Osborne Electronics.

When the shell is completed, Marley will install a timber grillage and piping. It will rest on precast concrete columns.

LOTS OF POWER—To maintain average production rate of 600 yd per hr, Ball & Simpson uses tandem pushers to load scrapers that are modified to hold 26 yd struck.

Scrapers Are Modified to Haul

The contractor on this $3.1-million California road project gained a decisive competitive advantage by taking an option on a borrow pit close enough to the job to allow him to haul dirt with big scrapers. His competitors bid on the basis of truck hauling.

By LARRY WISE
Associate Editor

EARTHMOVING on a 5-mi stretch of California's U.S. 101 represents only 18% of the total dollar value of a $3.1-million contract, but Ball & Simpson of Berkeley, Calif., consider it the crucial part of the project.

The main reason is that good progress on the grading part of the contract will enable the contractor to get structure work started and above ground before wet weather hits this autumn.

Another reason is that careful planning gave Ball & Simpson an important competitive advantage when they bid the job. When the California Div. of Highways advertised for bids, the state agreed to provide a borrow area but it was located so far from the job it would have required truck hauling. Ball & Simpson acquired an option on a prospective borrow area immediately adjacent to the project and their bid included a provision for hauling dirt with scrapers. This maneuver was instrumental in making them low bidder.

The new highway, located near Healdsburg, 70 mi north of San Francisco, will be a four-lane divided freeway. The contract includes construction of a frontage road, five major overpass and interchange structures, and relatively simple drainage facilities.

REDUCES STRESS—Rear push plate of first pusher is mounted on C-bar attachment that transmits force of back pusher to scraper, thus reducing stress on the first tractor.

DOUBLE DUTY—When needed, a Caterpillar D8 that pulls a sheepsfoot roller acts as a pusher. It's prime job is to spread dirt to maximum 8-in. thickness and compact it.

26-Yd Payloads

Excavation is limited to 730,000 yd, but the contract also includes 354,000 tons of imported fill. (California highway practice is to measure roadway excavation in cubic yards and imported material of all classifications in tons.)

Ball & Simpson has given first emphasis to building up fill for the approaches to the five structures on the project. This has permitted structural work to get far enough along so that when wet weather comes this fall the structures will be above the ground. Once above the ground, structural work can go on even in wet weather.

Ball & Simpson reasoned that if the fills were not placed early, the entire project might be delayed. The structures actually are a greater part of the job than is the roadway excavation, amounting to 29% of the value of the contract.

One structural fill at the north end of the job included about 28,000 yd of material. Because the underlying material is relatively soft, specifications required that a 10-ft surcharge be placed on the fill and left for 90 days to squeeze all the settlement out of the underlying material.

The 730,000 yd of roadway excavation on the project is divided into three general areas. At about the mid point of the job, a major cut involves more than 250,000 yd.

On the northerly part of the project there are a number of smaller cuts that total nearly 300,000 yd. The rest of the excavation is what Ball & Simpson's project manager, Hughes Davis, calls "scratch" grading and it is located throughout the job.

Excavation is handled by Cat DW20-456 scrapers. The firm aims at moving 600 yd an hour during a 14-hour, two-shift day, and their equipment spread in the borrow and fill areas is keyed to that production rate. Three Caterpillar D-8 tractors work the borrow area — two pushers that generally work in tandem, and one ripper-equipped tractor that also is used for push-loading.

At the start of the job when

END RESULTS—California specs allow contractor to devise compaction method. On this job, 90% of optimum density is achieved with sheepsfoot roller that follows water truck.

MODIFIED SCRAPERS . . .

continued

hauls were short, three scraper units could maintain the 600-yd-per-hr production schedule. But when hauls became longer three more units were added, and for a peak period of about three weeks when the haul reached a 2½-mi maximum, four additional units were added.

Tandem push-loading has been used extensively in the West because it reduces loading time and gets bigger loads into scrapers. With flat or downhill hauls common, scrapers often are extended and sideboarded to develop greater capacity. And with existing power, the scrapers can be loaded effectively only by tandem pushing.

Several of the scraper units on Ball & Simpson's job have extra capacity. The pans were modified by Peterson Tractor Co. of San Leandro, Calif., the northern California Caterpillar dealer. Capacity of the scraper units has been increased from 19.5 to 26 yd struck.

Peterson is a specialist at modifying equipment to adapt it to special Western conditions. Their modifications definitely are not "Joe McGee" jobs. They know their equipment well enough to prevent unusual overstresses.

The Caterpillar D-8 tractors used for tandem push-loading also were specially equipped by Peterson for this job. Both dozer blades and rear-end push-plates are mounted on swing frame trunnions on the tractors (the rear end attachments are called C-bar attachments.) Thus, the force exerted by a rear pusher is transmitted around the forward pusher to the scraper without putting unbalanced forces on the main frame of the first push tractor.

The material is spread in the fill by the DW20-456 scrapers. Working the fill is a D-8 tractor with a bulldozer that pulls a sheepsfoot roller. This unit helps spread the material to its required maximum thickness of 8 in. and also compacts it.

California highway specifications for fill compaction require end results only. It is up to the contractor to get the 90% of optimum density in any way possible. On this project, Ball & Simpson obtain compaction by sprinkling the fill and using the sheepsfoot roller.

Of the ten scraper units on the job at its peak, only three are owned outright by Ball & Simpson. Three more are on a rental basis with an option to buy from Peterson Tractor Co.

The other four scraper units, owned by another contractor, were on an adjacent job. Ball & Simpson capitalized on their availability and scheduled the long-haul part of their operations accordingly. Rental fee amount to $22.70 an hour and this included operation, maintenance, fuel and all other costs of operating the scrapers. Because the scrapers were on an adjacent job, Ball & Simpson did not have to pay a move-in and move-out charge. The four additional units enabled the contractor to maintain their 600-yd-per-hr excavation rate on the longest hauls on the project.

PAYLOADS—Scrapers, which are beefed up to hold extra yardage, are weighed carefully before they reach the fill on this scale, shown being assembled by Lorain truck crane.

Borrow Pit

A GRADING JOB similar to Ball & Simpson's U.S. 101 project now is underway near Martinez, Calif., where Gordon H. Ball, Inc., is moving an average of 10,000 yd per 8½-hr shift with 10 big scrapers. This $4 million contract for 3 mi of Interstate 680 requires 891,000 yd of earthmoving.

All of Ball's fleet of 10 Cat DW20-456 scrapers are extended and sideboarded to boost their struck capacities from 19.5 to 27 yd. And Ball has the power in the borrow area to take advantage of the extra payload provided by the enlarged bowls.

Four tractors handle tandem push-loading. Three of these are D9's and the fourth is a D8. Two of the D9's are equipped with push-type dozer blades and rear-end push plates, and the other two tractors use rippers to work over the borrow area. The tandem pushers are getting the scrapers out of the cut in 45 sec.

Once the scrapers are loaded, Ball sees to it that they hi-ball to the fill. One of the most important rigs on this job is a

BIG PUSHERS—Two Cat D9's, one equipped with a rear push plate, the other with a ripper, load a sideboarded Cat scraper, right. The other scraper is loaded by a D8 and a D9.

Power Keeps Scrapers on the Move

BeGe scraper pulled by a Cat DW-15 tractor. This rig has the prime responsibility for keeping haul roads in top shape.

Between the borrow and the fill areas, the scrapers, which travel at 30 mph, must cross several roads used by the public. To control traffic at these points, flagmen have a lot more to work with than a red flag. Instead, Ball has mounted highway stop signs on swinging arms at each of the crossings. These devices are similar to railroad crossing gates, except that the arms swing in a horizontal, rather than a vertical plane.

S. L. Martinelli is project superintendent for Gordon H. Ball, Inc., on the Martinez project. R. E. Andrade is resident engineer for California Div. of Highways.

Gordon Ball is part owner of Ball & Simpson, general contractors on the 5-mi stretch of U.S. 101 (see page 84) but the two companies are operated independently. Gordon H. Ball, Inc., has its headquarters at Danville, Calif. Ball & Simpson's main office is at Berkeley.

VALUABLE RIG—To keep haul roads in good shape, Ball uses a BeGe scraper pulled by a Cat DW15 tractor. Loaded scrapers travel over haul roads at speeds exceeding 30 mph.

SAFETY FIRST—Where scrapers cross public roads, contractor sets up swinging arms, similar to railroad crossing gates, that carry standard highway department stop signs.

Warehouses, Shops Move with Work Crews

Refrigerator Works in Reverse
Second-hand refrigerators store electric welding rods at strategic locations throughout the job. Instead of cooling, these units keep the rods warm for use on the job. The refrigerator's light, left on when the door is closed, gives off enough heat to warm the rods.

AIRLINE LOADING RAMPS and old refrigerators may not be standard construction equipment, but on a chemical plant construction project at Lake Charles, La., they are saving the contractor valuable time and materials.

Lummus-Houston Div. of The Lummus Co., Newark, N. J., engineers and constructors on the Continental Oil Co. alfols alcohol plant, uses the passenger loading ramps as movable work platforms. And the refrigerators, bought for $5 apiece, are used for storing electric welding rods.

Besides the ramps and refrigerators, Lummus is using several other imaginative gimmicks to speed the work and reduce site congestion.

Materials storage is an example. Instead of building temporary warehouses that take up space, Lummus utilizes some of the plant's permanent structures for storage. These are circular steel tanks fitted with a door in place of a steel plate near the ground.

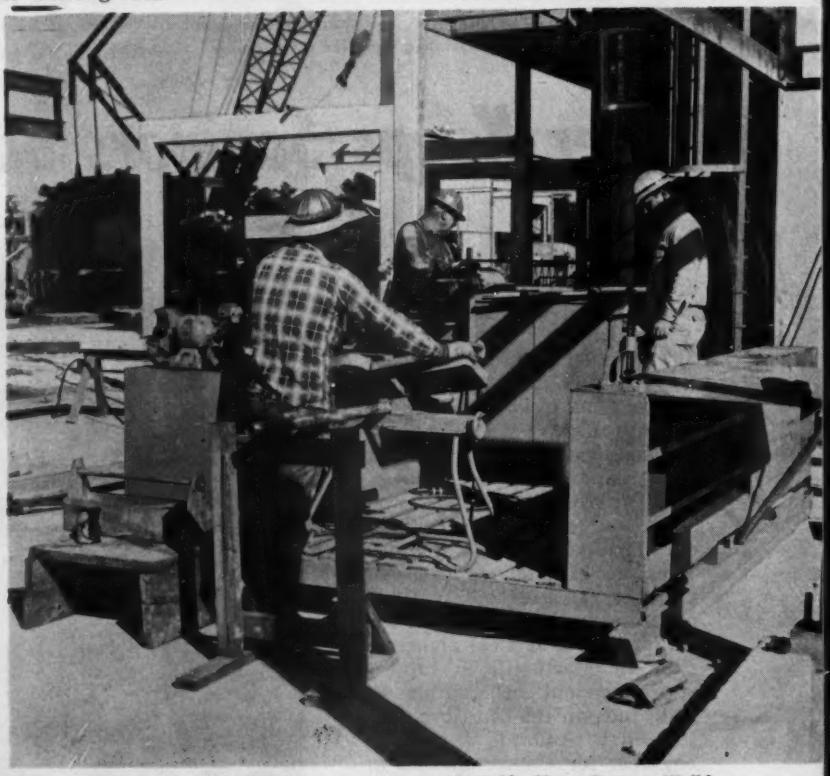
Mobility and reduced walking time are important features of other devices on the job. Shops and warehouses, for example, are portable. They are moved with the work to keep walking distances from the job to the tools or materials to a minimum. A crane attachment eliminates walking completely.

The portable shops are equipped with power tools and are specially designed for use by pipefitters, welders, carpenters, boilermakers, ironworkers and electricians.

Trailer vans serve as movable area warehouses. Supplied from a main warehouse, they are moved around the job as work progresses.

Because the effectiveness of the portable equipment depends on the ease with which it can be moved around the project, Lummus paved and graded the site at the start of the job. Drainage ditches also were dug and lined with crushed shell. The good roads and drainage kept the site and machines clean and helped reduce equipment downtime and prevent accidents.

Responsible for the design and application of the various items used during construction of this project is T. S. DeCuir, project manager, and Lummus field forces.



Portable Shops Reduce Walking
Power tools and other equipment used by each construction trade are always within easy reach of the work crews. The tools are installed in skid-mounted 8x12-ft shop consoles that are moved by tractor or crane as work progresses. Trucks haul the shops to and from the job.

Loading Ramp Holds Work Crews

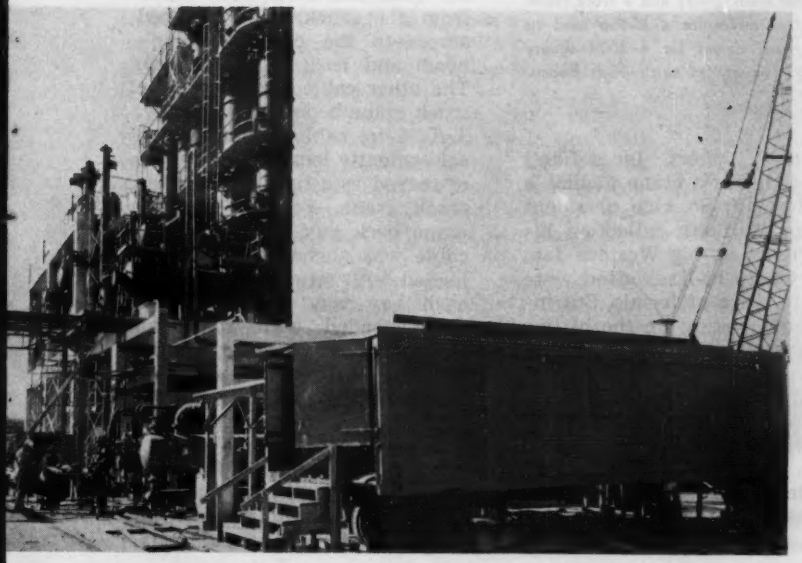
Airline passenger loading ramps serve as portable scaffolds for overhead work. Each ramp rides on two rubber-tired wheels and two steel casters. They can be wheeled quickly into position by one man. The platforms adjust hydraulically to any height up to a maximum of 10 ft.

Steel Tank Serves as Warehouse

Utilizing steel tanks as storage areas eliminates temporary warehouses and reduces job site congestion. A double door in place of a steel plate near the ground converts the tanks into warehouses. When storage space is no longer needed, the last plate is welded into place.

Platform on Crane Carries Crew

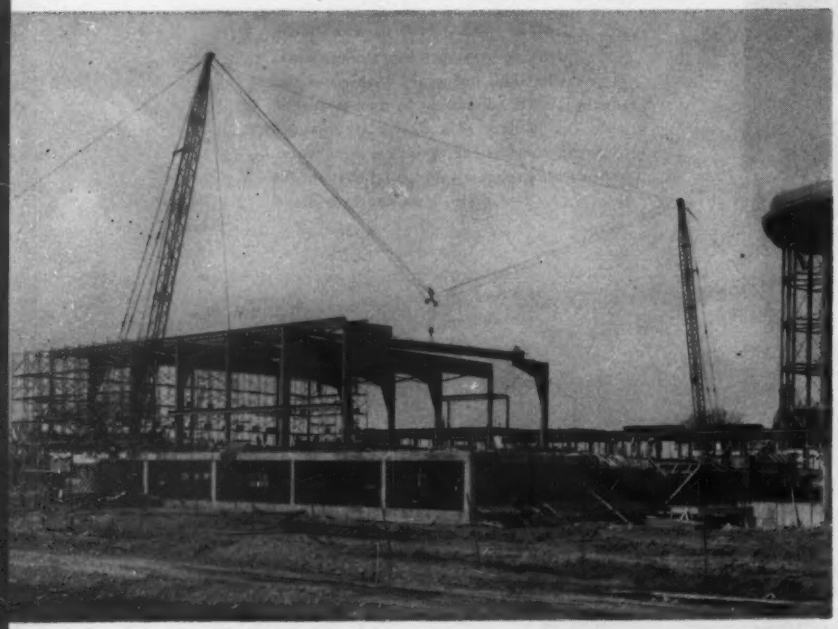
No need to run to keep up with this crane. The crew hops on a wood platform mounted on the rear of this Austin-Western hydraulic crane and rides with the load. This saves time because the crew is always there to handle the crane's hook or to help spot the rig and its loads.



Warehouse on Wheels Saves Steps

Work gangs never have to walk more than 50 ft to get materials. A trailer van that serves as an area warehouse takes the materials to where the work is. The van is stocked from a main warehouse from time to time, and workers help themselves to the materials as they need them.

Hi-Line Hung On Crane Booms Erects Steel



SKY HOOKS—Positioned 240-ft apart, a Lorain crawler crane (left) and a truck crane become the towers for a hi-line used to place 4-ton steel beams for a 200-ft-square building. The cranes carry 95-ft booms.

A HI-LINE TECHNIQUE more common to a logger's job than a contractor's was used successfully to place 4-ton steel beams on the top floors of a 200-ft-square building in Buffalo, N.Y.

The 50-ft-high structure, now under construction at New York State University College, is concrete up to the second floor and one side of the building has a 30-ft-high masonry wall. A crane would have needed at least 140 ft of boom and a capacity of 60 tons to reach out over 100 ft to place steel.

Buffalo Structural Steel Erectors and Riggers, Inc., didn't have that big a crane available for the job. So vice president George Mailloux called on his experience on big Western dam jobs, where hi-lines often were used to place materials. But instead of hooking up the hi-line on permanent steel towers, Mailloux figured out a plan that would enable the steel erector to take advantage of equipment readily available on the job.

A 40-ton-capacity Lorain crawler crane with 95-ft boom erected the second-floor steel. Then the steel erector brought in another Lorain, this one a truck crane also with 95 ft of boom. The two cranes were positioned 240 ft apart on opposite sides of the building site to act as the hi-line towers.

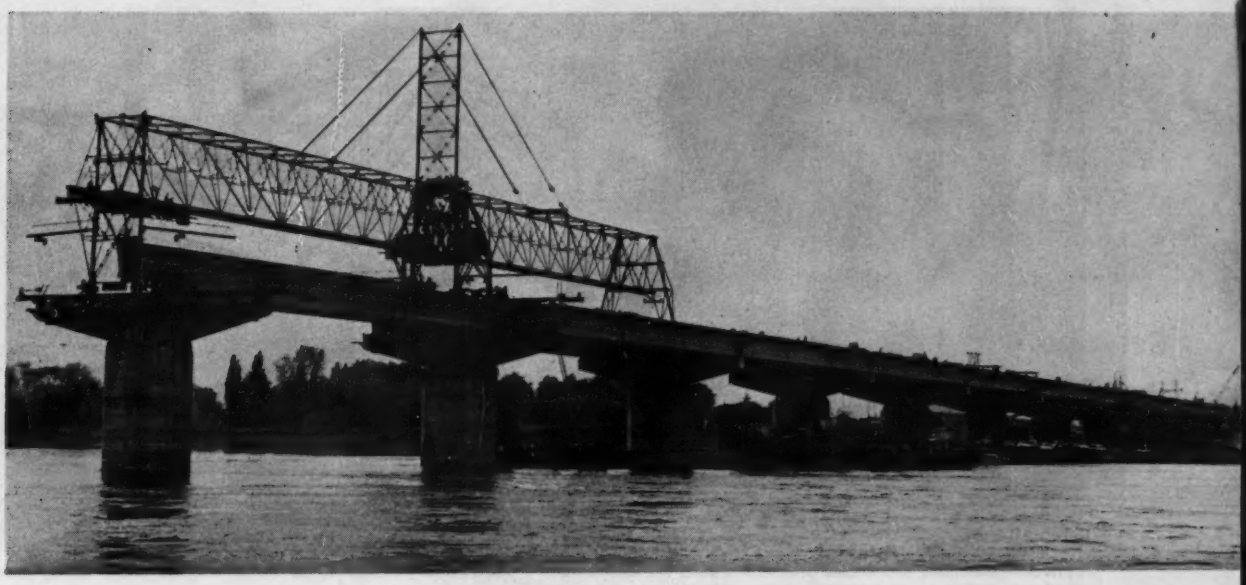
A ¾-in.-dia cable from one drum of the crawler crane was carried over its center sheave at the head of the boom, through a two-sheave block, and across to the truck crane's center sheave. Then the cable was reeved back through the two-sheave block and becketed off on the crawler boom.

These two parts of the ¾-in. cable served as the hi-line and the two-sheave block became the trolley. The amount of sag allowed in the hi-line determined the height of the trolley. The 95-ft booms of the cranes allowed a maximum sag of 40-ft, which was enough to keep the strain on the booms within maximum limits.

Two single-sheave blocks then were attached to the trolley. Another cable from the second drum of the crawler crane was run over the boom, through one of the single-sheave blocks that hung under the trolley, and down through a load block. This cable ran back up through the other single-sheave block hanging under the trolley and across to the truck crane boom.

The load cables from the truck crane were used to haul the trolley back and forth. One cable from the truck crane reached across to the crawler crane's boom and back to the trolley. The other cable went from the truck crane boom to the trolley.

A ⅞-in. cable anchored to a conveniently located water tower served as a back guy for the truck crane. For the crawler crane back guy, another ⅞-in. cable was anchored to a truck loaded with structural steel. As each bay was completed, the truck loaded with structural steel moved parallel to the building with the crane. When the truck crane had to move, the cable anchored to the water tower was adjusted. The steel work on the structure was completed well within the specified time limit, and finish work on the building is now underway.



Unique Rig Sets Girders For Long Canadian Bridge

Forty-six spans of the Champlain Bridge across the St. Lawrence at Montreal are of prestressed concrete girder construction. To cast and place the 180-ton, 176-ft members, the contractors developed many new tricks

CONSTRUCTION ITEMS as diverse as a sprayed-on form-release agent and a 240-ton device for placing concrete girders are helping to bridge the St. Lawrence at a fast pace.

Production is at the rate of two spans, each 80 ft wide and about 180 ft long, per week. And this involves precasting, post-tensioning, and placing 14 big girders; casting deck-slab closures between girder flanges, then post-tensioning the whole deck transversely; and construction of necessary piers and footings.

Contractor for the job is a joint venture of three Montreal firms: McNamara (Quebec) Ltd.; Key Construction, Inc.; and Deschamps & Bélanger Ltée. MKD set up its yard at one end of the job and moved into high gear with eight girder-casting beds and four sets of steel forms.

The girders are 176 ft long, 10 ft deep, and have a 7-in.-thick web. Flanges are 69 in. wide at the top and 27 at the bottom. Weight of each girder is about 180 tons. And, with seven girders per span, there are 322 of them to be cast.

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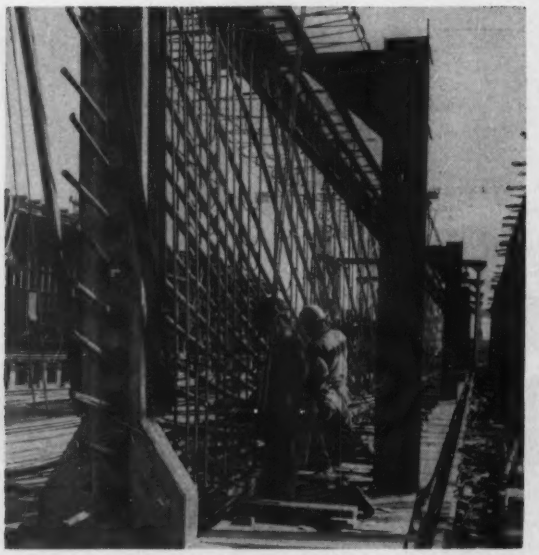
PLACING — Launching unit that extends over two spans is 360 ft long, weighs 240 tons. Hydraulic hoists ride monorail to lift a girder, move it ahead over open span, lower it to place.



TYING—Reinforcing and ducted prestressing wires are assembled on jig. On-site continuous-weld machine makes ducts from strip.

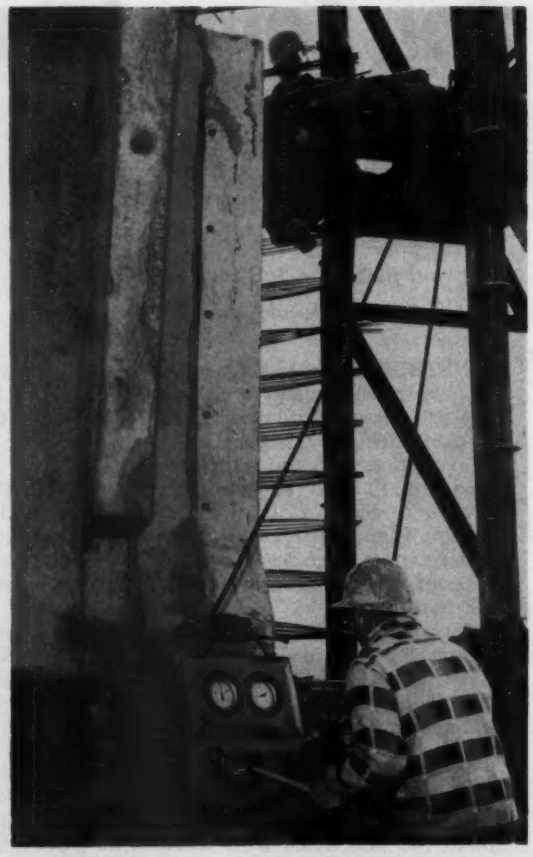
MOVING—Picked up by trolley-mounted chain hoists on self-propelled A-frame gantries, girder core assemblies move to forms.

CANADIAN BRIDGE . . . *continued*

Job-Site Casting

Special Care Is Given to Face of Forms

Concrete surface must be near perfect, so contractor spends 1½ hr per day preparing forms for next pour. After cleaning (left), form face is sprayed with Shell Form Compound C (below). Delivered as pre-mixed slurry, compound is job-mixed with eight parts of cold water. Cost of form release agent for a 176-ft girder is about $4.

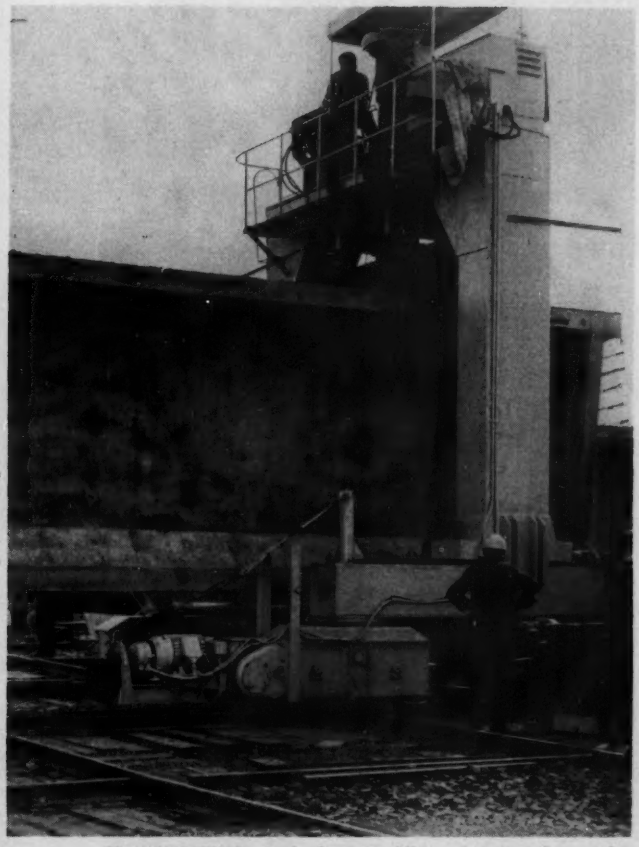


PRESTRESSING—Stressing begins 48 hr after pour, when concrete has minimum 3,500-psi strength. Freyssinet system is used.

POURING—Tower crane places girder's 88 yd of concrete in steel form in about 3 hr.

STRIPPING—Truck crane removes form from girder 12 hr after pouring. With four sets of forms and eight casting beds, yard turns out three girders per 12-hr day.

Yard Teems with Innovations



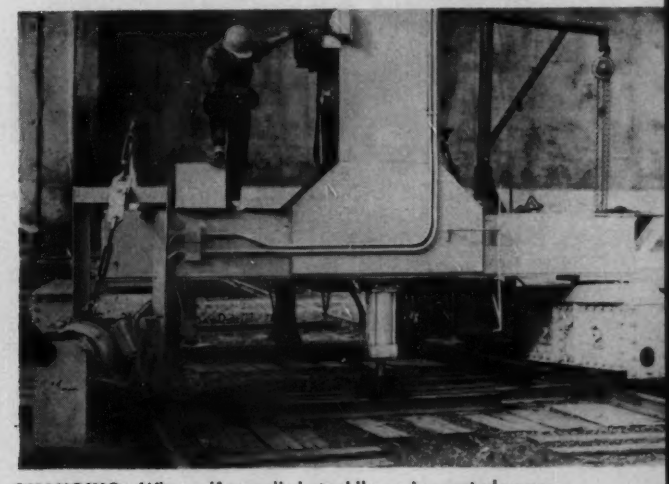
TRANSFERRING—Rail-riding straddle carrier transfers girder to storage. Contractors built French-designed rig in their shop.

Girder construction begins with assembly of reinforcing stirrups on a jib-beam. Hooks welded to the stirrups set the correct drape to the 24 ducted prestressing cables that are placed next.

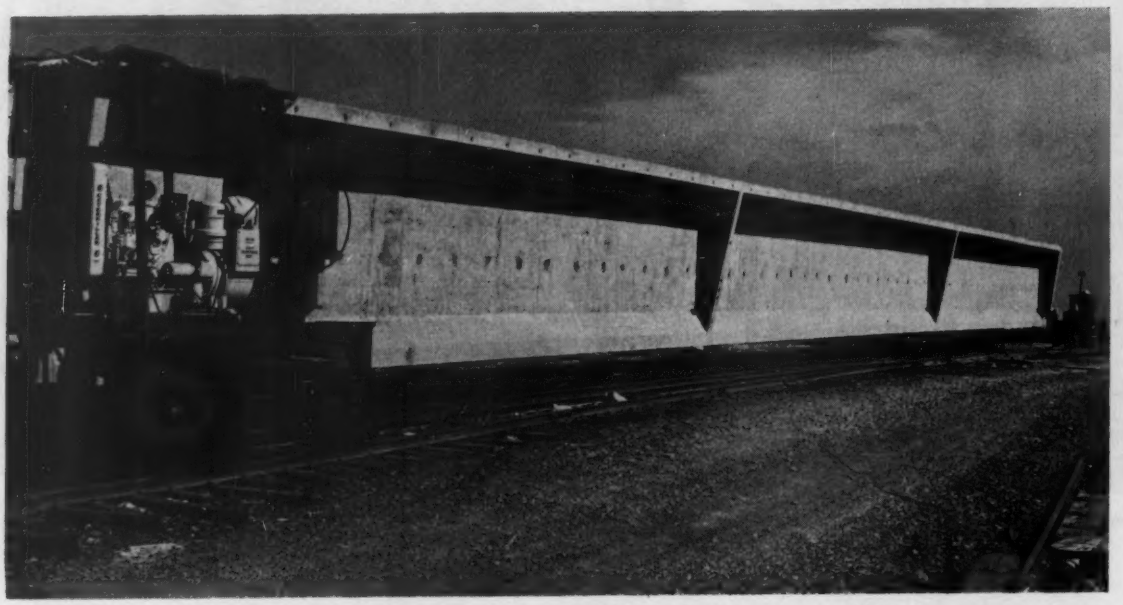
A continuous-weld machine makes the ducts right on the job from thin strip steel 6 in. wide and 180 ft long. Into each duct a mechanical device feeds 12 prestress wires from a battery of reels.

Four self-propelled A-frame gantries transfer the completed core from jig to form and concreting begins. Concrete, with a 2 to 3-in. slump and 4 to 6% entrained air, comes from a job-site plant. Internal and external vibrators consolidate it.

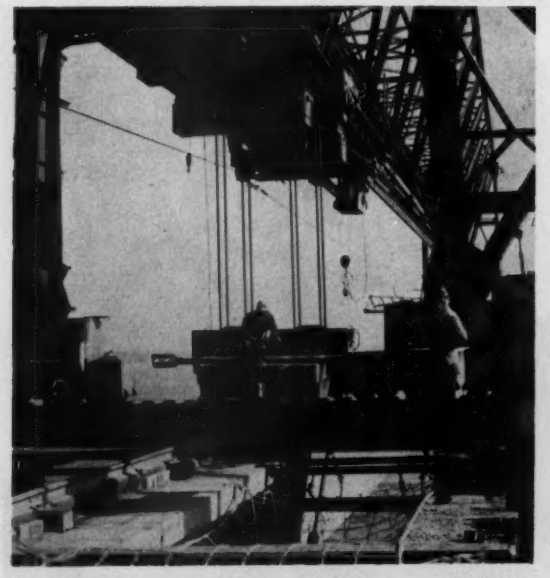
continued on next page



CHANGING—When self-propelled straddle-carrier must change direction, it jacks itself up so wheel trucks can be turned.



TRANSPORTING—Self-propelled low-bed carriers transport girder from storage yard to launching unit that will place it in bridge. Designed in France and built by contractor, the units are powered by Caterpillar diesel-electric generating sets.



SETTING — Triangular truss of girder-launching unit (above) carries monorail on which ride lifting trolleys (right). The launcher moves transversely on rails placed atop previously erected span and on the far pier cap of the span it is erecting.

Forms are stripped after 12 hr, and stressing begins after 48 hr. When 14 cables have been stressed, rail-riding self-propelled straddle carriers move the girder to storage. When concrete reaches 5,000-psi strength, six more cables are stressed (the other four are done with the bridge deck). Then, rail-mounted dollies carry the girder to the device that sets it in the span.

This huge unit is about 360 ft long and extends over two spans. Its three sets of A-frame legs carry a triangular truss on which two lifting trolleys ride. With the trollies at the rear to act as a counterweight, the unit can be cantilevered ahead to land its front legs on the far pier of the next span to be set. Then the trolley-hoists pick up a girder delivered atop the previously set span, move it ahead, and lower it to place. Transverse rails let the unit move sideways.

Deck construction follows girder placement. Slabs between girder flanges are poured on forms hung from flanges. Later, flanges and slab are prestressed transversely.

With a pedigree reaching back over 60 years, the famous Mack Bulldog is today the recognized symbol of leadership in the heavy-duty truck field.

BALANCED

Balanced Design assures you Unmatched Performance.

The Mack concept of BALANCED DESIGN means Mack-engineered and Mack-built components which work together with maximum efficiency—not just when new, but after hundreds of thousands of miles of profitable operation. Only Mack offers trucks and tractors with true BALANCED DESIGN because only Mack makes all its own major components . . . makes them to standards of efficiency, ruggedness and precision accomplished nowhere else in the industry. MACK BALANCED DESIGN results in vehicles whose engines, clutches, transmissions, carriers, axles and suspensions work in close harmony. No trucks assembled with purchased components can achieve the uncommonly smooth, powerful, responsive and economical performance built into each Mack.

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The manufacturing concept which enables Mack to build BALANCED DESIGN into its vehicles also enables Mack to assume full responsibility for every truck or tractor bearing the famous Mack bulldog. You get this Undivided Responsibility because Mack alone insists on building its own major components. Competitive manufacturers without exception, buy many, if not all, of their components from outside vendors. Who guarantees these components? Who provides adequate service on them? Sometimes the truck manufacturer . . . sometimes the component manufacturer. Too often this means split responsibility and costly downtime.

There's none of this when you buy a Mack. Because Mack insists on building its major components, Mack assumes Undivided Responsibility for the entire vehicle. We build it . . . and we stand behind it 100%.

MACK-BUILT

...for your specific job

Mack B-40 and B-60 Series

Payloads: Rear dumper, 6-12 cubic yards—Mixers, with 5-8 cubic yards agitating capacity (in six-wheel models). **Engines:** 150, 180 and 205 h.p. diesel; 150, 160 and 185 h.p. gasoline.

Mack B-80 Series

Payloads: Rear dumper, 12-16 cubic yards; Mixers, with up to 12 cubic yards agitating capacity (in six-wheel models . . . larger with special provision). **Engines:** 180, 205, 220 and 320 h.p. diesel; 232 h.p. gasoline.

Mack builds trucks and tractors in a wide range of capacities. Whatever kind of operation you have . . . whatever loads you haul . . . there is a Mack truck that will do the job economically and efficiently.

Your nearest Mack branch or distributor is qualified by knowledge and experience to help you select the Mack best suited to your requirements. And when it comes to parts and service the Mack-trained mechanics and genuine Mack replacement parts found at your nearest Mack outlet can make a big difference in your truck's operation. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

Mack M Series

Payloads: Rear dumper, 15-, 18-, 25-, 30-, and 45-ton models for off-highway service. **Engines:** Diesel power up to 525 h.p. Choice of mechanical or torque converter transmissions.

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MACK for over 8 straight years NO. 1 by far in sales of diesel trucks

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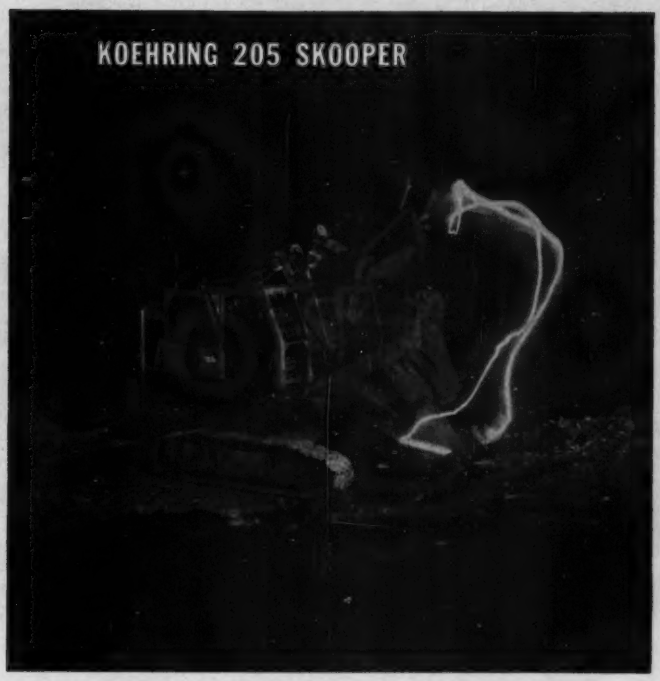
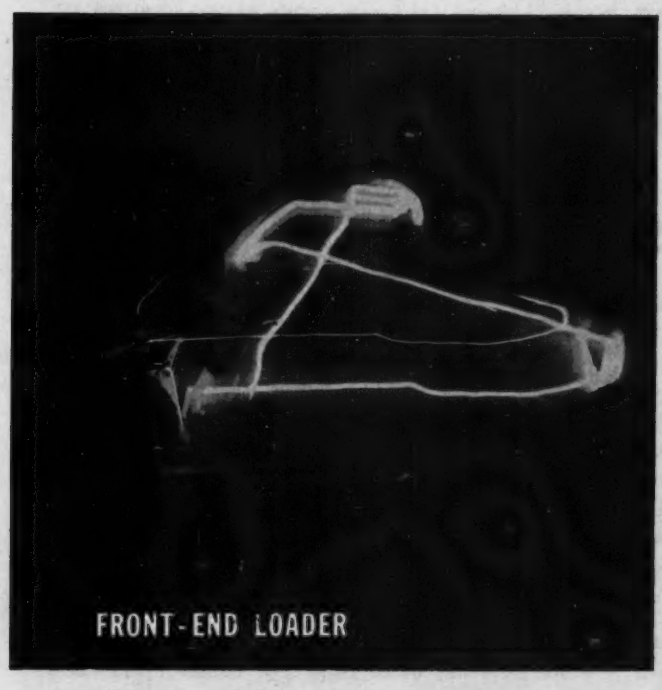
"RIVERS OF LIGHT" SHOW HOW SKOOPER OUTPERFORMS FRONT-END LOADER



SKOOPER'S standstill loading creates a light pattern that's short and compact... not long and extended like the one for the loader!



Cycle Test Proves SKOOPER Best!

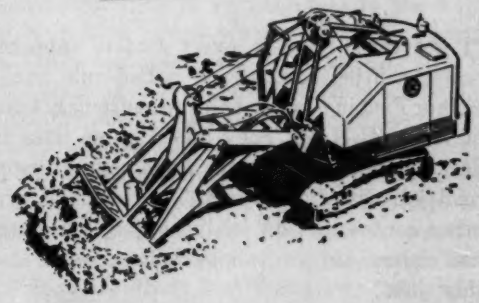
Shown here are actual time-exposure photographs of a Koehring 205 SKOOPER and a rubber-tired front-end loader of similar bucket capacity going through actual digging and dumping cycles under identical conditions. A light was attached to the bucket of each machine and the light pattern traced by each bucket was recorded by time exposure photography.

The light patterns show that with SKOOPER, all motion means work . . . there are no flying starts, no spinning tires, no churning crawlers, no waste drive-in, back-off motion . . . SKOOPER stays in one spot and really bails dirt, delivers big loading tonnages, using less horsepower with less maintenance!

See your Koehring distributor for complete details on the profit pattern that SKOOPER can produce for you!

K-100

There's Nothing Like it on Wheels or Tracks!



KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

Circle 99 on Reader Service Card

◀ *Circle 98 on Reader Service Card*

Three-to-two production payoff with Cat power shift 631s

"I get three trips to every two of (another type power shifting scraper) on a half-mile haul," says Arthur Fleming, operator for Armstrong & Armstrong, of Roswell, N. M. They added three 631s to their fleet in February and put them right to work on a road job near Las Cruces. This payoff is typical of other contractors on job after job, where results—not claims—do the talking. Check other results on this job.

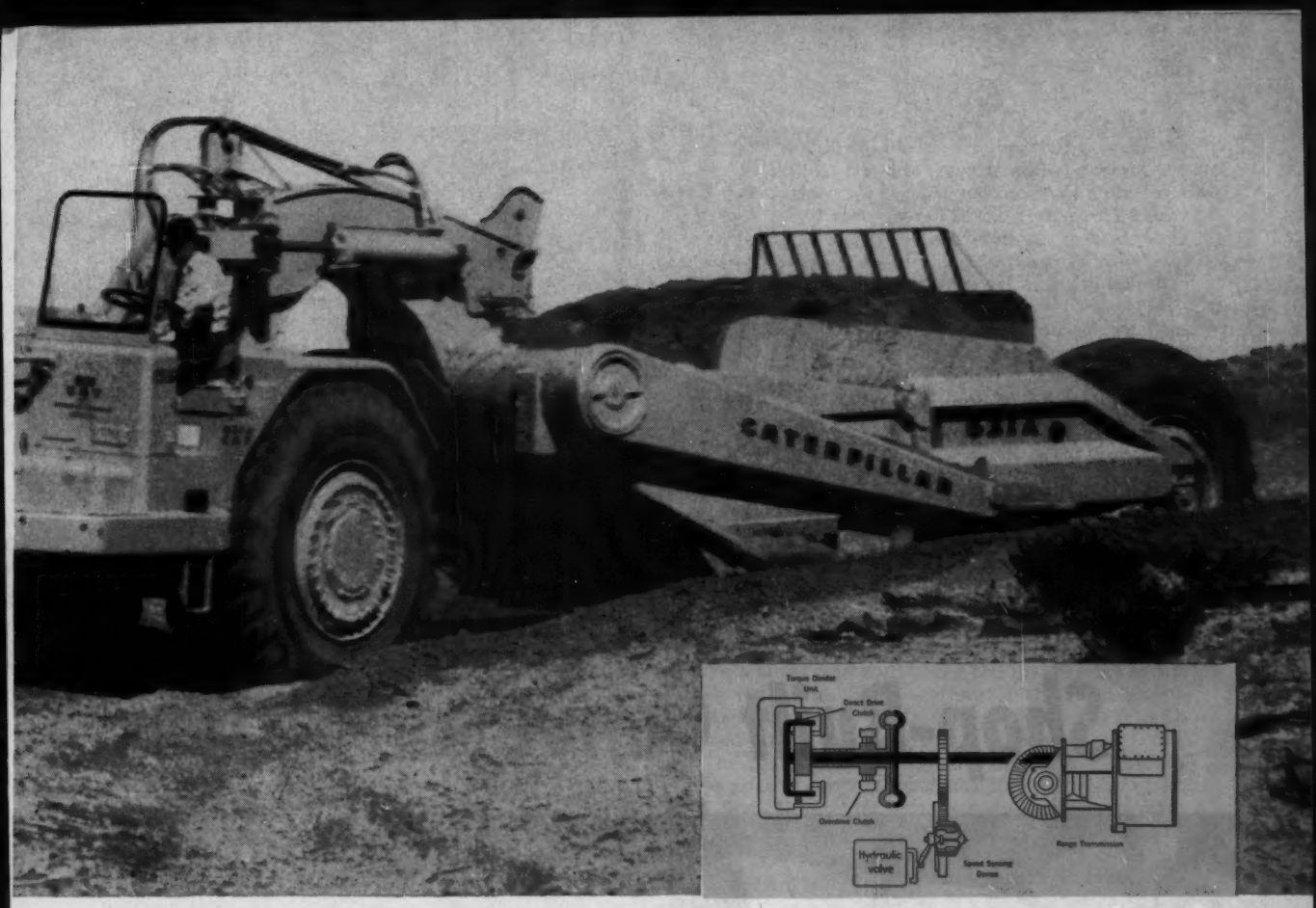
"Leaving the pusher, I can shift right up to second range within 150 feet," Fleming adds. "I just floorboard it, and the engine winds right up. In a couple hundred more feet I can shift up to third range. It has so much power it's rarely in torque divider drive (see INSIDE STORY), even carrying a big load in this sand.

"Between the power and the automatic shifting, this is a snap to run. It works great on the fill, too. I have to get an even spread to meet state specs (4-inch compacted lift). I just head down the fill and watch the scraper to dump evenly. If it hits a soft spot, the machine shifts down automatically and keeps right on going. I don't have to worry about shifting and the scraper doesn't bog down."

Power automatically matched to the job

What's the difference between Cat power shift transmissions and ordinary power shifts? Basically, the Cat unit matches power *automatically* to job conditions. It's the only unit that gives you a torque converter's ability to balance speed and torque to suit underfoot conditions, but it cuts it out for high-speed operation on the haul road to give you more efficient direct drive and overdrive. Results: faster cycles and higher production.

But *job-matching* power and *efficient* high speed are just two of the advantages designed into the power shifting 631s. Full unit construction allows every major component to be serviced without disturbing adjacent units. For example, the torque



divider transmission is removable without disturbing the engine.

31 MPH+smooth ride gives high usable speed

The 631A, powered by a turbocharged, aftercooled 420 HP engine and carrying 28 yds. heaped, has a high usable speed of 31 MPH. Smooth ride is important in being able to use this speed. Bill Botwinis, chief engineer for Armstrong & Armstrong, commented, "I'm amazed the operators can stay on these machines as fast as they go over the rough spots. They slow down the other machines, but not the 631s. They just don't bounce so much."

Want more proof how the 631 can outproduce, at lower cost per yard, any other machine in its class? See your Caterpillar Dealer!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U. S. A.

CATERPILLAR

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PRODUCE MORE AT LOWER COST WITH A POWER SHIFTING 631

INSIDE STORY on the Cat power shift transmission...nine speeds with just three shifts

Cat power shift transmissions for wheel tractors match power to job conditions by automatically shifting—up or down—through three types of drives in each of three selected speed ranges. Results: nine speeds with just three shifts.

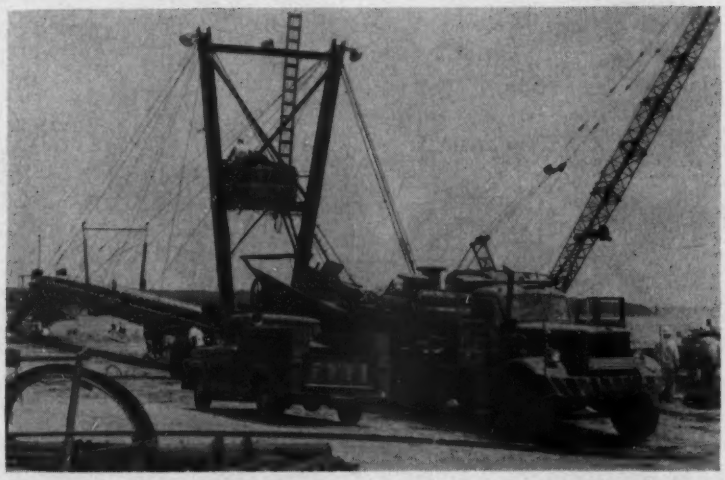
A range transmission mounted on the rear of the machine is operated by a single control lever. This one lever gives you three forward ranges, reverse, neutral and a special load range.

Automatic shifting is accomplished in the torque divider unit by a simple mechanical speed sensing device and a hydraulic valve actuating clutches. The 631 starts moving in torque divider drive, a combination of torque converter and direct drive. As speed picks up, the hydraulic valve engages a clutch to shift from torque divider drive to direct drive, locking the converter out of the system. At a higher RPM, a second automatic shift takes place—from direct drive to overdrive. If the machine slows down, this process is reversed . . . giving automatic downshifting. A shift indicator (tachometer) shows when to change speed range up or down as needed.

To keep the machine at top production, just keep the accelerator floorboarded all the time. Then you'll always have the right speed and power for the job you're doing—take full advantage of the transmission designed for the machine you're using.

Circle **101** *on Reader Service Card*

A 107-ft-long conveyor mounted on I-beam trailer places rip rap and pours pile and deck concrete for dock extension at Wilmington. Rig reaches from shore to outside of the dock.



VERSATILE RIG—Tower atop trailer anchors cables that hold conveyor. Tractor pulls entire unit. Contractor positions rig perpendicular to dock on earth fill alongside.

Shop-Built Conveyor Is Jack

AT BUSINESS END—Electric motor powers turn-head that rotates chute as rig concretes 34-ft-wide section of 27-in.-thick deck.

# of All Trades

TIDES CALL THE TURN on this job by limiting each work day to 5½ hr. But Newark Construction Co. of Newark, Del., beats this daily deadline with a shop-built rig that swiftly handles three important operations.

The job: an 80x1,000-ft extension to an unloading dock at Wilmington Marine Terminal. The rig: a 107-ft-long conveyor mounted on a lowboy trailer.

The conveyor looks like a rocket launcher. It cantilevers 96 ft from the rear wheels of the trailer. Cables strung from a tower mounted atop the trailer hold the conveyor. Working from an earth fill alongside the dock, the rig can reach across the full width of the work area. On this job it:

- fills 1,277 Monotube piles with concrete.
- places 28,000 tons of rip rap between piles.
- pours a 27-in.-thick concrete deck atop piles.

The contractor devised the rig primarily to place rip rap. Because of the long reach required, a conveyor seemed to be the only feasible means. Newark originally planned to place pile and deck concrete with cranes, but the tides curtailed pours and ruled out cranes. With little or no modification, the conveyor proved to be a high-speed concrete placer.

Heart of the rig is a 36-in. Cedarapids conveyor that Newark extended from 86 ft to 107 ft with a Flexco field splice. The contractor fabricated a 24-in.-deep Warren-type truss to hold the conveyor and mounted it on a 90-ton Rogers I-beam trailer. A Diamond T tractor pulls the entire rig.

At the discharge end of the conveyor, a 5-hp electric motor turns a rotating head that feeds a 10-ft-long chute. The turn-head rotates about an arc of 160 deg. Also mounted at this end of the conveyor is a 20-hp electric motor that powers the belt. Outlets at the site provide 440-v power.

An operator controls both motors from a platform on the tower that anchors the cable-suspended conveyor. Made up of heavy column sections, the tower transfers a 40-ton load to the rear wheels of the trailer. No outriggers are required to stabilize the rig.

Cables can be adjusted to vary the elevation of the conveyor. Except for the turn-head, there are no power attachments to raise or lower the conveyor or to swing it back and forth.

Newark's shop superintendent, Bill Kraus, built the rig at the contractor's home shop. Before shipment, they assembled the rig for a thorough pre-job test. Then they stripped it for transportation on trailers to the site. It took one day to reassemble the rig on the job.

Before the Iron Monster went into action, American Dredging Co. removed 85,000 yd of muck from the marshy site with a 16-in. hydraulic dredge. Then Newark moved in a Bucyrus-Erie 51-B mounted on a 60x100-ft sectional steel barge to drive a sheet pile wall along the inside edge of the dock extension. Some sections of this wall had to be tied back with deadmen buried in the earth fill placed on the land side of the dock.

The barge-mounted rig also drove 18-in. Monotube piles to support the dock. Its 110-ft boom held a Vulcan O hammer that swung free without leads for this job. An 8-in.-long driving collar at the bottom of the hammer fit over the top of a pile and held it in place. A swivel hook at the top of the hammer kept it from twisting.

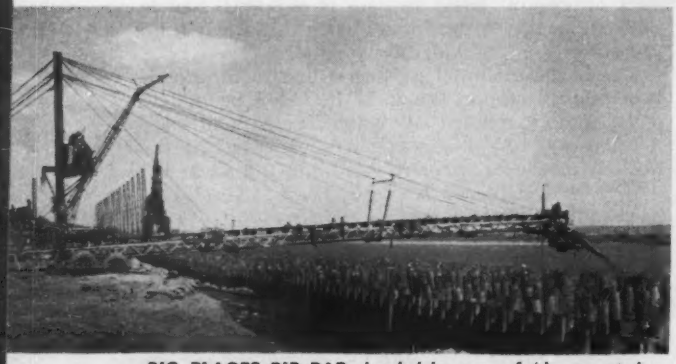
A 20x86-ft steel frame welded to the front of the barge held a timber templet that guided the piles. The templet was adjustable by means of bolts to take care of variations in pile spacing. It held two rows, totaling 14 piles, at a time. Newark drove that many in an average 8-hr day. Average depth of the piles is 110 ft.

The conveyor placed most of the 8,000 yd of concrete it took to fill the piles. It averaged 40 piles

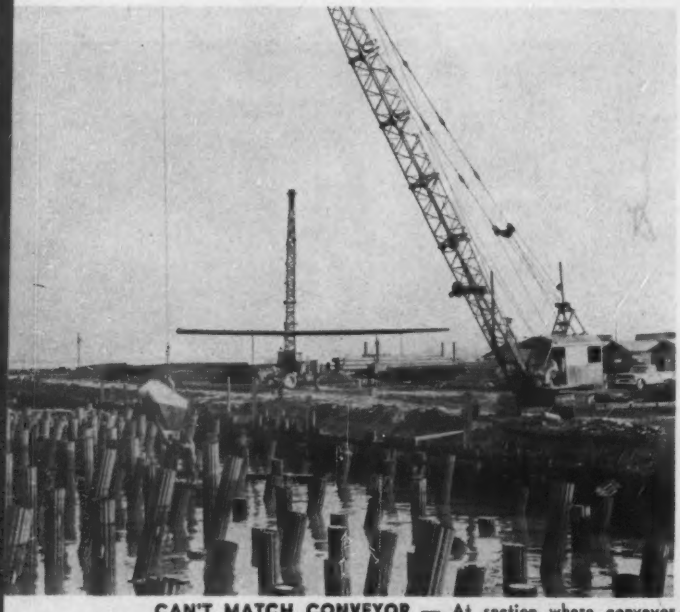
MULTIPLE FEED—Transit-mix truck feeds 6-yd batch of concrete onto conveyor belt in 2½ min. Conveyor can handle two trucks at a time—one at each side discharging directly onto belt.

LONG REACH — Conveyor cantilevers 96 ft from rear wheels of trailer, which holds up under 40-ton load from tower without outriggers.

PLATFORM HOLDS CONTROLS—Operator perched on tower platform controls conveyor, signals truck driver to move ahead.



RIG PLACES RIP RAP—Loaded by apron feeder mounted on trailer, conveyor places protective mat of rip rap between piles.



CAN'T MATCH CONVEYOR — At section where conveyor couldn't maneuver, crane pours piles four times slower than rig.

per day. For pouring piles, a steel funnel replaced the chute at the end of the conveyor.

At a section where there was not enough room to maneuver the conveyor into position, Newark used a crane with a 2-yd bucket to pour the piles. It averaged only 10 piles per day.

After pouring the piles, the conveyor now is placing a protective mat of rip rap between the piles. The rip rap is open-hearth slag that varies in size from 6 to 18 in. The material is hard on the 5-ply, 28-oz conveyor belt, but Newark finds the rig handles slag with no trouble. They expect the belt to last the duration of the job.

Trailer trucks haul the slag to the site, where it is spotted in stockpiles along the earth fill. From there, a crawler-mounted Caterpillar 977 front-end loader feeds it to a 30-in.x18-ft Tel-Smith normal duty apron feeder. The feeder is mounted on the trailer behind the conveyor. The conveyor places the rip rap in a 20-ft-wide pass. With a belt speed of 300 fpm, the rig handles 80 tons of slag an hr.

With the rig positioned perpendicular to the dock, the truck driver moves the business end of the conveyor from the far side of the dock to the near side in 5-ft stages. After rotating the turnhead across a 20-ft-wide pass, the conveyor operator signals the truck driver to move ahead.

Altogether, the rig is about 168 ft long. The driver needs about half again this length to maneuver it into position for the next pass. Newark keeps the entire width of the earth fill alongside the dock clear to provide the necessary elbow room.

Next, a crew installs forms atop the piles for the concrete deck. First, they place a pair of 6x14-in. timber staylaths along each row of piles, one on each side. With impact wrenches, the crew bolts the 30-ft-long sections into continuous stringers that tie together each row of piles.

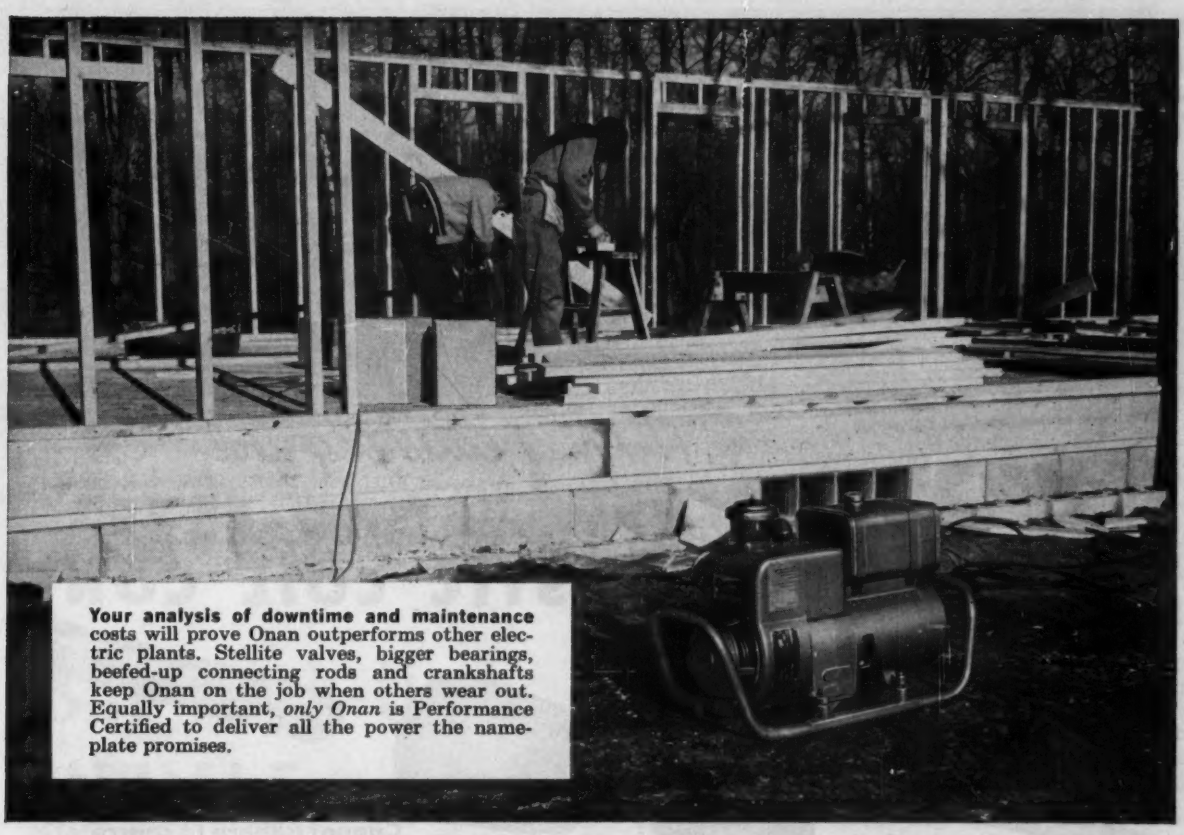
Hangers made of 1 in. cold rolled stock at Newark's home shop hold 2 x 12-ft steel pans atop the piles. Spacing of the piles alternates from 5 to 6½ ft between rows. The Inland Steel Ribforms extend across two rows of piles. It takes a man only one day to install pans in a 34-ft-wide section.

A subcontractor places reinforcing and then the section is ready to pour. The truck positions the conveyor perpendicular to the dock and again pulls it ahead from the far side. With the 10-ft-long chute on the turn-head, the crew can cover the entire width of a section without shoveling.

Two transit mix trucks—one at each side—feed the conveyor, which places 12 yd in 5 min. At the loading station, the belt is low enough for direct feed from the trucks. No ramps are needed to elevate the unloading hoppers of the trucks. Baffle plates at each side of the belt prevent spillage.

Newark makes about four pours per week with the rig, completing each 230-yd section in less than 5½ hr allotted by the tides. They start a pour as soon as high tide has receded enough to expose the bottom of the deck forms. When the tide comes in again, the water helps cure the concrete.

Rod Layton is project manager for Newark. F. O. Sutton is general superintendent and Frank Davis is the engineer. J. J. Scherrer is resident engineer for Modjeski & Masters, the consulting engineers representing the Wilmington Board of Harbor Commissioners.



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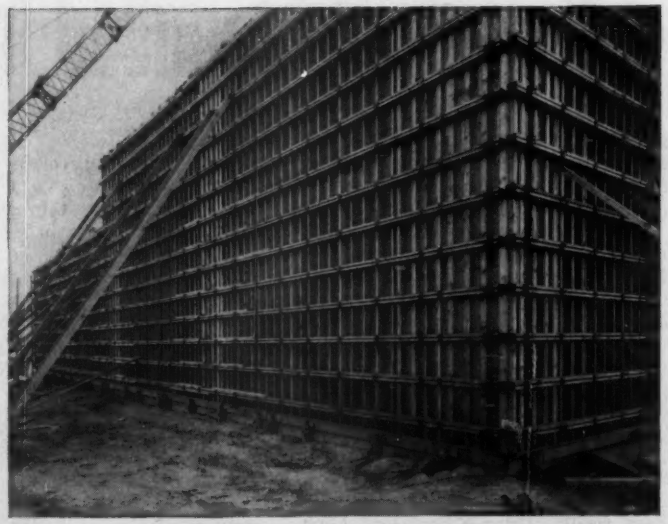
The various types of ties, working parts, and tools which comprise the modern SUPERIOR Coil Tie System provide the speediest, safest, most versatile concrete forming method available today! Any form, no matter how complex or unexpected its nature, can be economically tied using one or more of the SUPERIOR Coil devices. Form erection crews can maintain fast schedules because simplicity and adaptability are built-in. Only the coil tie is expendable . . . all working parts are returnable for credit. The Cone-Fast Coil Tie now features the plastic "Bond-Free" Coil Cone which threads onto the extended coil of the coil tie as shown above. Cones cannot be knocked off and units can be bench assembled, if desired.

The versatility of this system is shown in a new 6 page bulletin, now available . . .

Request a copy of BULLETIN CTS-1



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Cut work-time IN HALF on 85% of your tractor jobs

with LW Tournatractor®

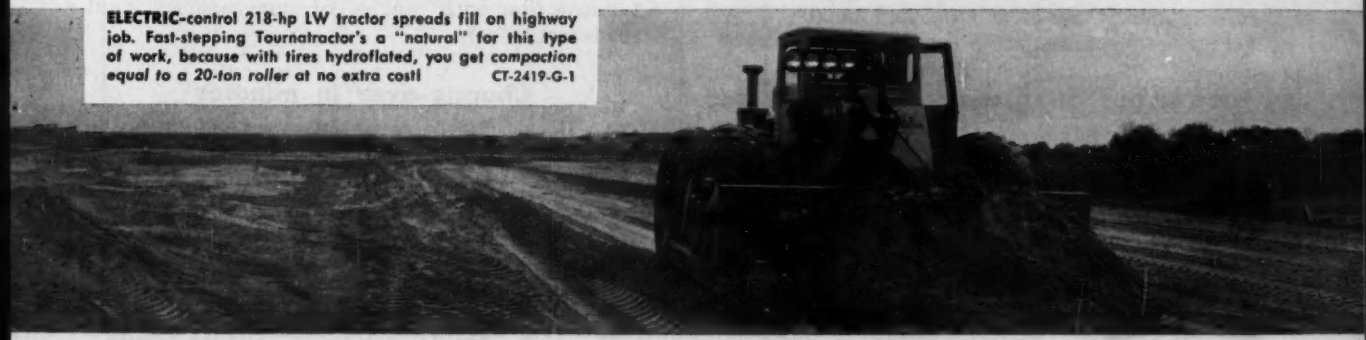
TRUE . . . on "stay-put" jobs in limited areas crawler tractors may prove best, because of their greater lugging power at slow speeds. But on about 85% of tractor jobs . . . where you need speed and mobility, as well as power and traction . . . LeTourneau-Westinghouse Tournatractor means extra savings *for you.*

LW tractor's fast work-speeds step up operations . . . complete long dozing, pushing and towing jobs in *half the time.* Acceleration is fast, with 218 hp operating through a sealed anti-friction drive. Power-shift transmission allows operator to shift gears on the run, losing no momentum. Maneuverability is quick and easy.

Here are more facts about Tournatractor . . . *Drawbar pull:* at speeds over 2 mph, as good as comparable-priced crawlers. *Mobility:* to go anywhere at speeds to 18.5 mph. *Roadability:* travels over streets, highways, does not damage concrete, blacktop, RR ties. *Easy operation:* with *electric* or *hydraulic* blade control. *Low maintenance:* because of far fewer parts, simple rugged construction.

Let us show you how 218-hp LW Tournatractor can fit into your operations . . . to double production on most of your jobs. Ask for details and demonstration.

ELECTRIC-control 218-hp LW tractor spreads fill on highway job. Fast-stepping Tournatractor's a "natural" for this type of work, because with tires hydroflated, you get *compaction equal to a 20-ton roller* at no extra cost! CT-2419-G-1



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You can now profitably pull and operate TWO scrapers behind ONE prime-mover. Tandem operation... tried many times in earthmoving history, but never successful with hydraulic or mechanical control... is now *practical.* LeTourneau-Westinghouse *electric* control (which sends power directly to where it's needed via simple flexible wire) solves the problem of operating the second scraper efficiently. As a result, with LW 'Pulls*, you can *double your capacity* for only the cost of a second scraper, plus minor installation and hookup... and get *up to 58 yards capacity every trip!*

Save on operating, maintenance costs, too

One operator handles *both* scrapers. There's only *one* prime-mover to care for *(one* engine, *one* transmission, *one* final-drive). No need for a "super" pusher, either. With LW Tandems, you use the *same-size* pusher you'd use for single-scraper, because you're only loading one scraper at a time. In fact, you actually load *faster* because there's no time lost for pusher repositioning.

Less haul-road maintenance

No wider, no higher than single scrapers, LW Tandems use any haul road. That means fewer machines on the road, less traffic congestion. Actually, ton-for-ton there's *less* pounding of haul roads with tandems than with "singles" of equal capacity. Haul roads last longer.

Change-over *in minutes*

Once the basic tandem installation has been made, you can add, or take off, the "extra" scraper *in minutes.* You adjust to changing conditions on-the-job, or job-to-job, at will. So, for a *new* low-net-cost-per-yard, look into LW Tandems today!

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company Where quality is a habit

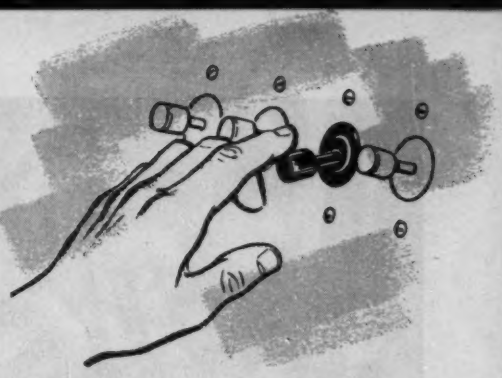
Circle 108 on Reader Service Card

... and LW "electrics" control both scrapers as easily as ONE

Haul 2 loads every trip with any 'Pull:

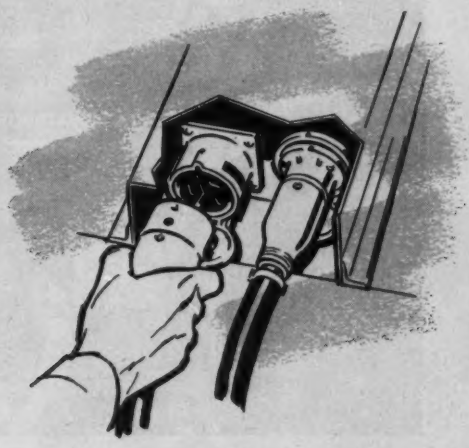
PRIME-MOVERS	SCRAPERS	TOTAL HEAPED YARDS
143-hp D Tournapull®	Model D Tandem D's	9 18
290-hp V-Power C Tournapull	Tandem D's Fullpak® 20 Tandem 20's	18 20 40
276-hp C Speedpull® (4-wheel prime-mover)	Fullpak 20 Tandem 20's	20 40
430-hp V-Power B Tournapull	B Fullpak Tandem 20's Tandem B's	29 40 58

Your LW Distributor can convert your present 'Pulls to tandem operation, or will equip you with new 1961 'Pulls all ready for tandem profits!



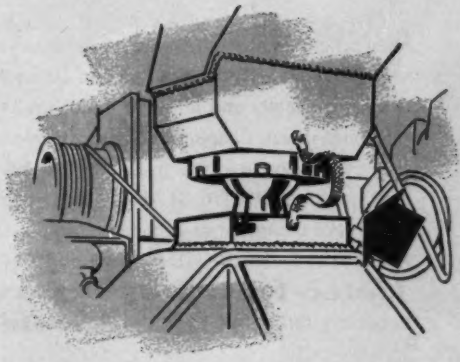
Fingertip control of both units

One row of LW electric switches controls apron, tailgate, and bowl-hoist of front scraper . . . a second row controls the second scraper. It's as simple as that! Operator gets immediate, accurate response. Motors reach full speed in ⅔ of a second! System is completely weatherproof. Costs less to maintain at full operating efficiency than any other control system.



Rear-scraper hook-up is a snap

You connect or disconnect second scraper in a matter of minutes. Convenient, one-hand-size plugs on "electrics" and air lines readily insert into quick-disconnect jacks, located at the hitch. Connections are firm, will not come apart during turns or other maneuvering.



Single-scraper maneuverability

Universal-swivel hitch connects front scraper to rear. Big, rugged plate and hitch are welded to front-scraper's push-block frame. Pivot-point is over rear-axle of front scraper. You perform any maneuver possible with single scrapers . . . make 180° tandem-turn in area only 20 to 25% wider than with "singles". Back-up, too, with no jack-knifing.

*Trademark TP-2280-DC-2r

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DELCO HYATT WOUND ROLLER
DELCO NEW DEPARTURE LAND-RIDING SEAL AND TRASH SHIELD
DELCO HYATT METRIC SERIES

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Keep rolling equipment on the move; keep stationary units and tools in operation by making necessary bearings replacements with Delco New Departure Ball and Delco Hyatt Roller Bearings. They have become the standards of the industry because of their reliability and long life under the most severe service conditions. ■ METRIC SERIES . . . Precision roller bearings with built-in extra capacity for transmissions and gear boxes. WOUND ROLLER . . . Made in all sizes, operates with inner race or directly on shafting. LAND-RIDING SEAL AND TRASH SHIELD . . . Excellent for severe contaminant conditions, moist or dry. SENTRI-SEAL . . . Most popular seal today. For every contaminant condition. ■ Whatever the reason for equipment being out of service and in the shop, the important thing is to get it on the job quickly and keep it working. Your Authorized Delco New Departure and Delco Hyatt Bearings Distributor can help you do it. These top quality, precision **Delco New Departure** and **Delco Hyatt Bearings** are nearby, distributed nationally through **United Delco**

UNITED MOTORS SERVICE, Division of General Motors Corporation

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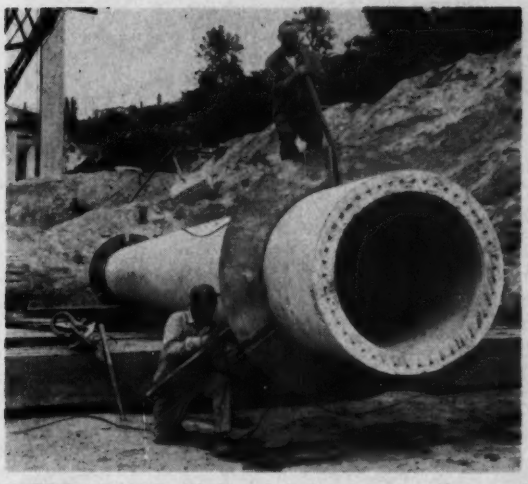
Clamps Hold Cap Pour By Friction



FRICTION CLAMP—Workmen bolt three-segment collar around precast column. Belting between column and clamp gives friction.

WHAT? Support concrete pier-cap pours solely by friction clamps around the pier columns? "No," the Washington Highway Dept. has steadfastly said.

"No," that is, until just recently when they gave a contractor the green light to use such a device on the Lakeview Viaduct project in Seattle (CM&E, Aug., p. 106).

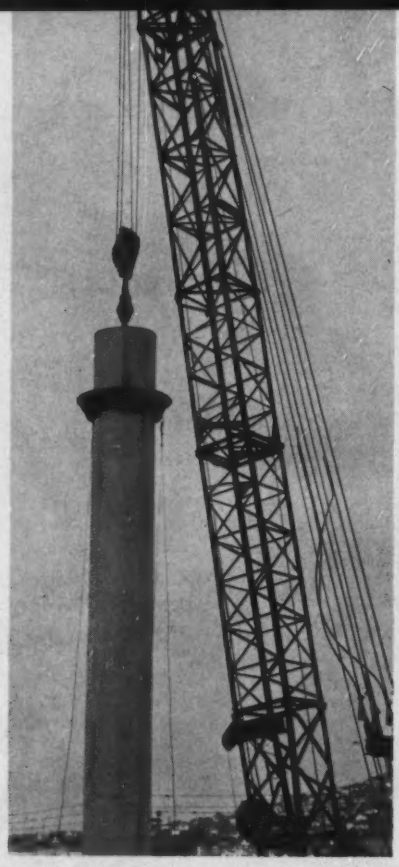
There, each friction clamp supports 17 tons of forms, falsework, and concrete for the pier cap, eliminating any shoring to the ground. But prior to this operation, the clamps act as lifting collars while a crane erects the precast cylindrical pier-columns, which weigh up to 27 tons.

The clamp collar is a three-segment steel weldment weighing 1,100 lb. Each segment covers slightly less than 120 deg of arc, and four 6x⅞-in. bolts at each joint hold the segments together. In cross-section, the segment is an angle with a 10-in. flange extending out and a 12-in. flange parallel to the column. Gussett plates brace the flanges. And rubberized-fabric belting between collar and column provides friction.

The pier columns are 4-ft-dia prestressed hollow concrete cylinders. Height varies from 20 to 70 ft, and weight is 750 lb per ft. A total of 405 cylinders is involved—four to a typical pier, or bent, with a 3x4½x60-ft cap.

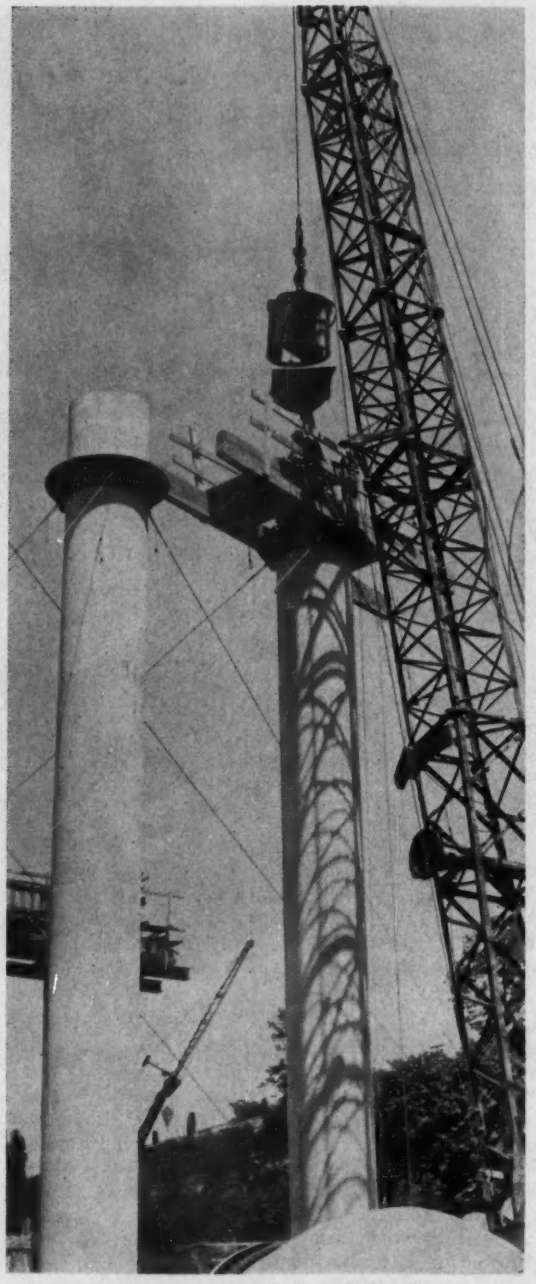
At the job site, one of the collars is fitted to the

CAP POUR—Clamps around columns each support 17 tons of falsework, forms, and concrete.



LIFTING COLLAR—Clamp acts as lifting collar as crane upends column, places it on footing.

LEVELING UNIT—A second friction clamp, near column base, lets jacks adjust height of cylinder.



PLATFORM SUPPORT—Another use for clamp is to hold platform as column is concreted to footing.

CLAMPS HOLD CAP POUR... *continued*

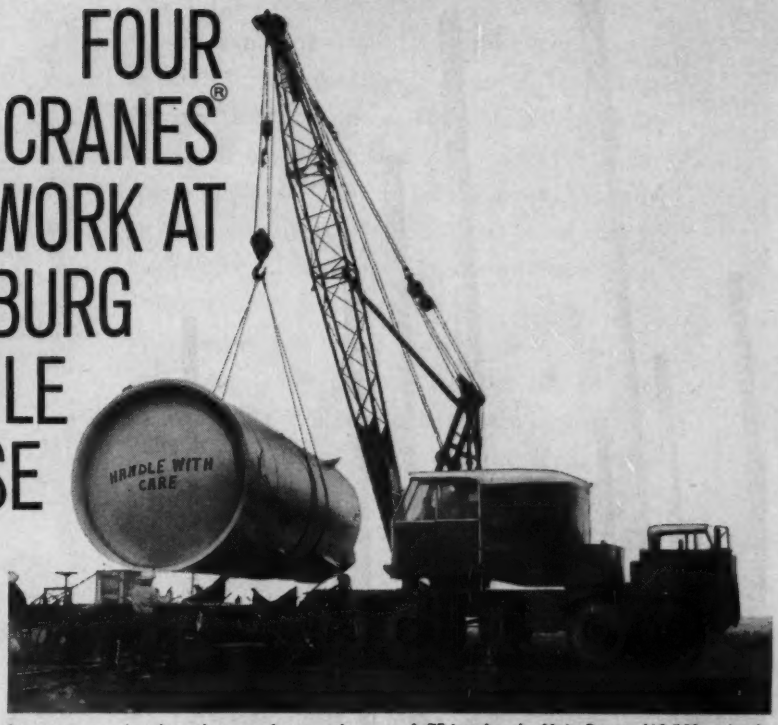
cylinder near each end, and their bolts are torqued to 16,000 lb. A Northwest 60-ton crane, with 95-ft boom, hooks on to one collar to lift the cylinder and place it over reinforcing steel projecting from its footing. Screw-jacks set under the other collar adjust the cylinder to exact height. And guy-wires previously attached to the first collar are anchored to 6x6x3-ft concrete deadmen on the ground. Then the crane unhooks.

Next job of the upper collar is to support a prefab timber work platform while a concrete plug is poured in the cylinder to join it to its footing. After all columns of a bent are completed, falsework and forms for the cap are erected on the upper collars and the pour is made. Total load on the four collars is 68 tons.

The upper collars are removed after a crane has lifted off forms and falsework. For this, several of the collar bolts are loosened and the unit simply slides to the ground, restrained by a line from a crane.

The viaduct contractors, a joint-venture of Rumsey & Co. and Morrison-Knudsen Co., are using 23 of the collars on the job. Test-loaded to 60 tons, they were designed and made by Pacific Car & Foundry Co.

FOUR MOTO-CRANES® WORK AT PLATTSBURG MISSILE BASE



A 75-ton Lorain Moto-Crane, MC-760 unloads a 50-ton pressure vessel used for missile fuel storage. It is 44 feet long and 12 feet in diameter. Like a huge thermos bottle, it must be handled with extreme care. Precise crane control and steady footing are required. 120 of these vessels, weighing from nine to fifty tons, must be placed in concrete housings.

Power-Set® outriggers major factor in speeding up crane work

A 75-ton Lorain Moto-Crane, MC-760, and three 45-ton Lorain Moto-Cranes, MC-545, all equipped with hydraulically operated Power-Set outriggers, scamper all over a 1600 square mile area around Plattsburg, New York, to service twelve Atlas F intercontinental missile launching complexes.

A joint venture by contractors Raymond-Kaiser-Macco-Puget Sound Bridge is using the four Lorains to unload and load and place extremely expensive and easily damaged pressure vessels, set steel forms, muck out, excavate, and pour concrete for the silos.

It is a 235-mile jaunt around the circuit to visit each of the sites so high speed mobility and fast set up time for lifts are important cost-saving factors.

"Manual outriggers unthinkable"

Leo Leifester, Equipment Superintendent says, "Traveling between 11 track sidings, the cranes must make good time on the highway to keep our demurrage charges down. As soon as a tank is delivered we load it on a truck to release the car. The Power-Set outriggers are an important factor here because production time makes setting outriggers manually virtually unthinkable. *They would take four times as long to set up.* The crane then follows the truck to the site and unloads it.

"The fast highway speed of the Lorains keeps travel time to a minimum. The MC-760 moves along at 35 mph to keep up with the truck, and it can negotiate the numerous hills without significant loss of speed. A crane may remain in one spot for three weeks, then might average 15 to 30 miles per day for the next three weeks.

"Any advantages in faster travel time, or quick set up time are translated into more efficient use of our costs."

Lorain Moto-Cranes, equipped with Power-Set outriggers and with many other operating advantages, can do a cost-cutting job for you too. Why not call your nearby Lorain distributor for all the facts—or ask for a demonstration to prove to yourself what Lorains can do. You'll be glad you did.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

One of the three 45-ton Lorain Moto-Cranes, MC-545 stands rock steady on Power-Set outriggers to gently unload a 31-ton pressure vessel for nitrogen and oxygen storage.

LORAIN®

DOES MORE FASTER • FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

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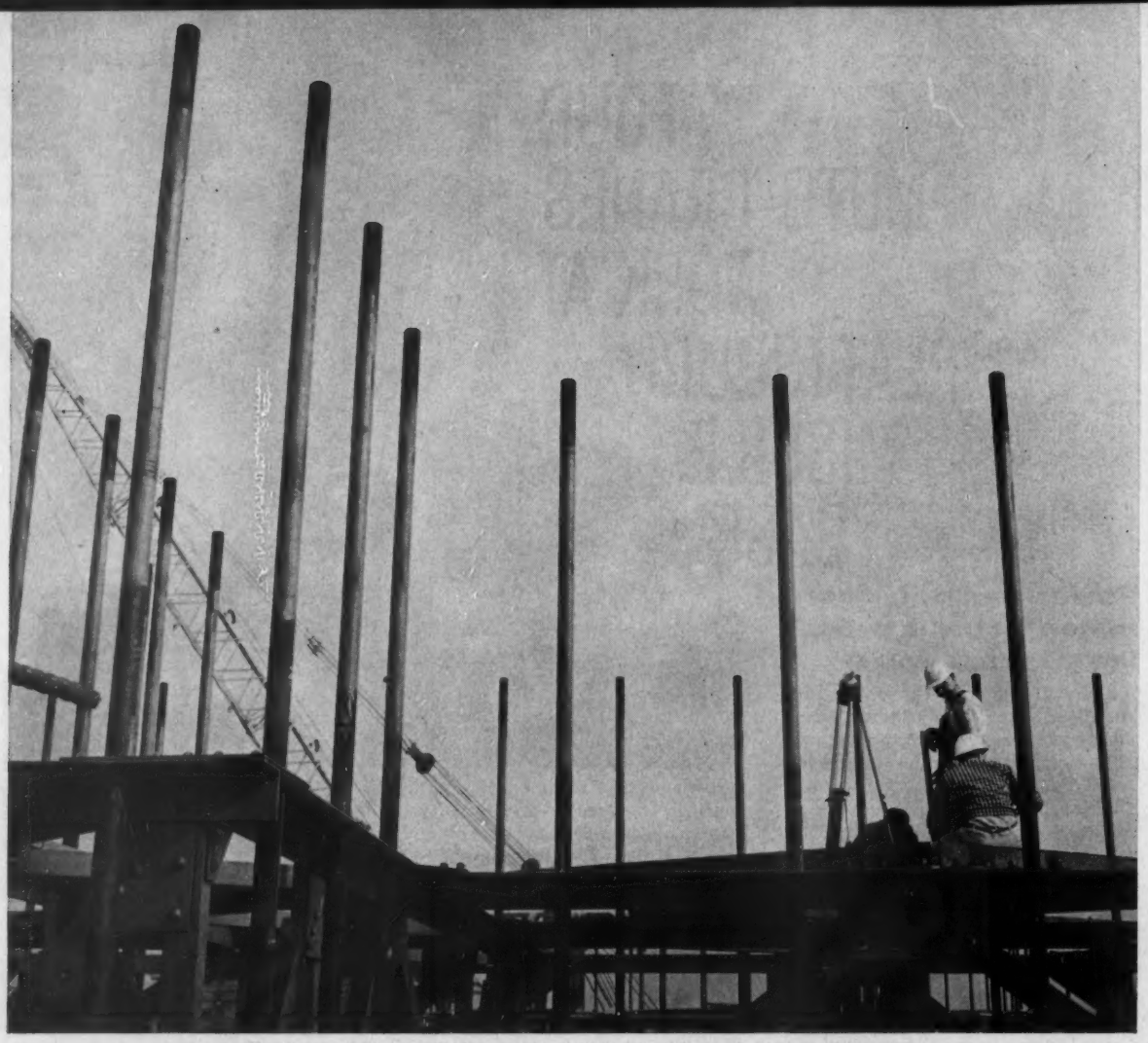

The Verrazano-Narrows Bridge is being built by the Triborough Bridge and Tunnel Authority. Consulting engineers are Ammann & Whitney. Sub-contractors: Steers-Snare

ANCHOR BOLTS *for Verrazano-Narrows Bridge*

Fifty-four anchor bolts have gone into each of the two 37-ton anchor bolt frames, which will secure the 630-ft-high Staten Island Tower of New York's Verrazano-Narrows Bridge to its massive concrete pier. The 3-in.-diameter bolts are 21 ft, 9 in. long. After the frames are positioned, they will be embedded in the pedestals for support of the tower legs. The anchor bolts provide the necessary resistance to uplift which occurs, at the base, during the bridge construction phase.

Specially manufactured at Bethlehem's Lebanon, Pa., fastener plant, these king-size bolts required exacting tolerances, since all future work on the huge tower is dependent upon close fit, as well as precise location of the bolts and their connections within the tower base section.

This precision workmanship is characteristic of all Bethlehem fasteners for construction: tie rods, turnbuckles, and clevises; concrete form stakes; U-bolts; high-strength bolts; rivets; and many other standard and special fasteners . . . in a wide choice of sizes, styles, coatings, and finishes.

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Strength to spare

In motor graders strength is important. Strength to withstand the shock and strain encountered in the heaviest grading jobs. In Huber-Warco graders the backbone of strength is the frame ... it assures dependability for any job. Like those on the 8, 9, 10 and 11-D series, this all-welded, low-stress, single-member steel frame has reserve strength built in. Of full box-section design, its two steel channels are boxed together with heavy steel plates top and bottom. These two channels, which separate just behind the saddle, are further reinforced on the inside with heavy steel plates assuring strength to spare for even the most strenuous jobs. What's more, you get better visibility plus extra clearance for blade maneuverability due to Huber-Warco's high-arch design. Investigate these and the other plus features you get with Huber-Warco equipment— motor graders, 3-wheel and tandem rollers, maintainers. Your Huber-Warco distributor has all the details.

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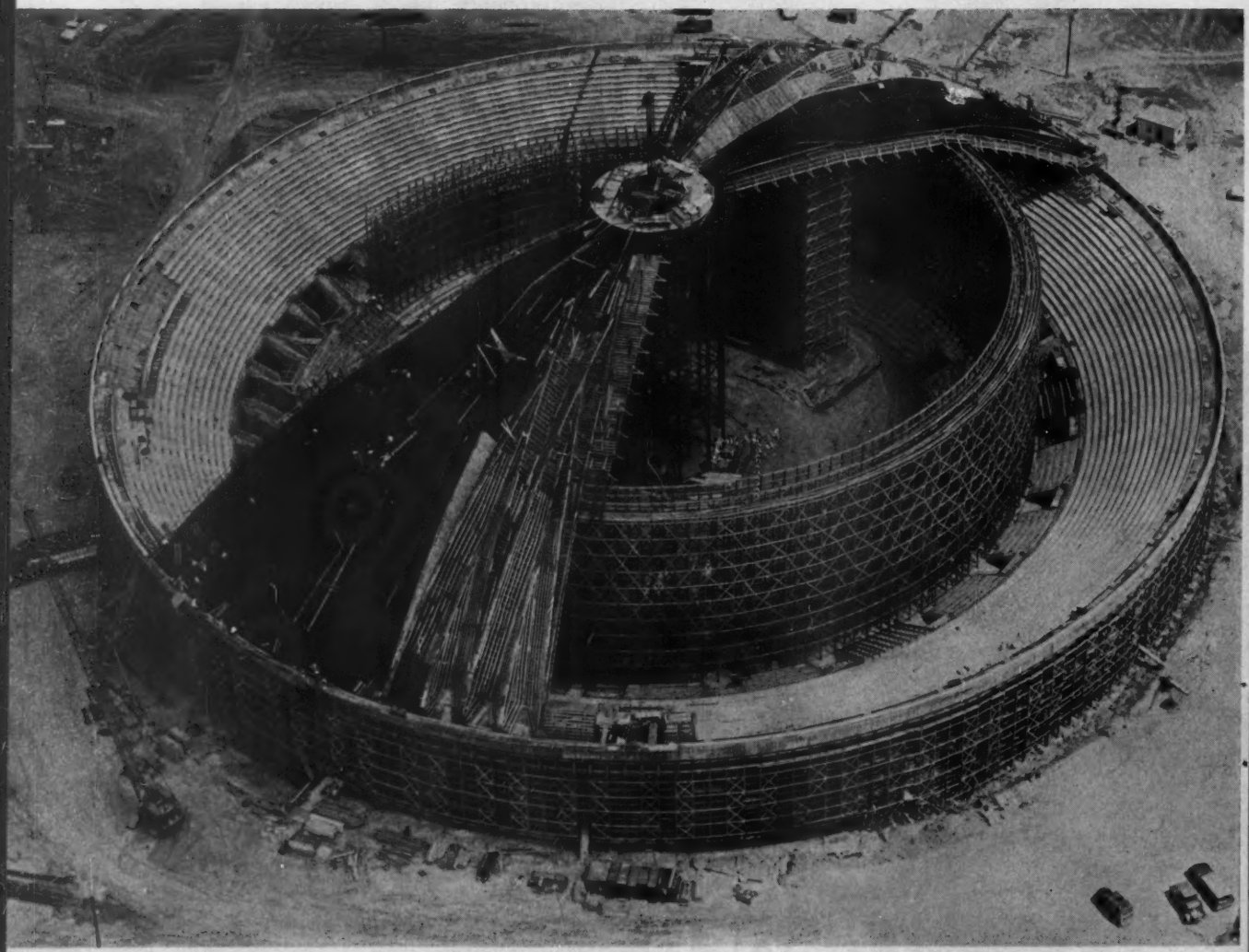
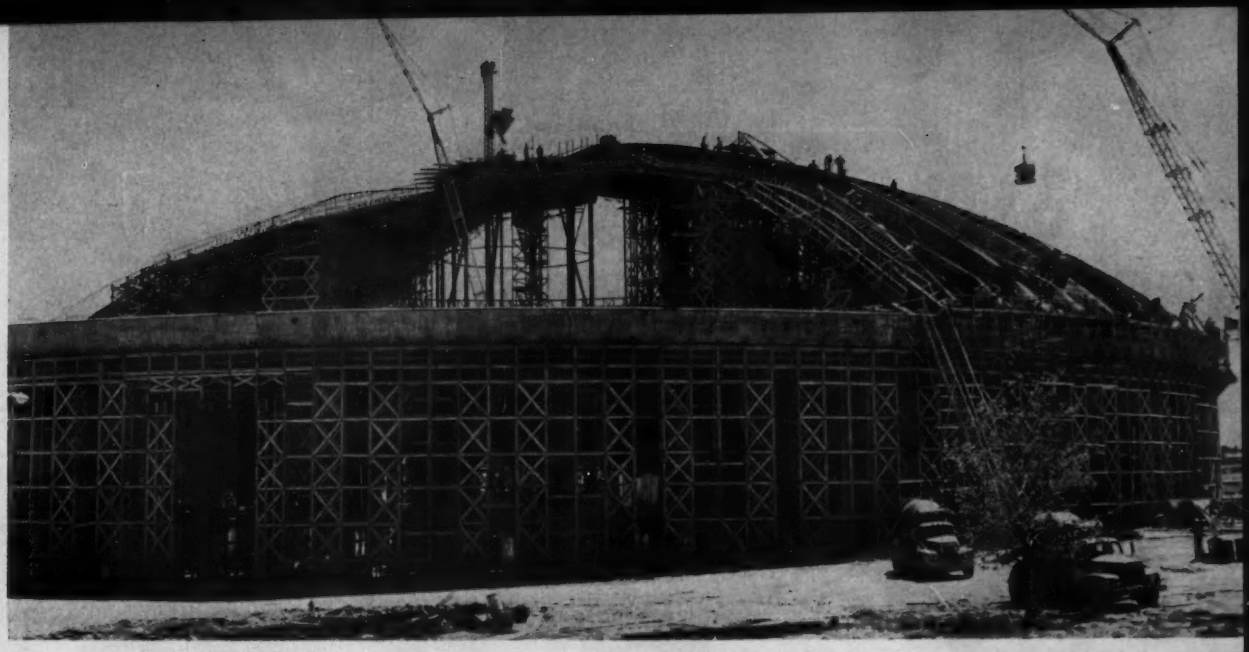
HUBER W WARCO

Open-web steel trusses span between three rings of fixed falsework to hold form segments for this 400-ft-dia folded-plate dome. Travelers rotate each segment between pours.

Forms Rotate Atop Falsework To Cast Folded-Plate Dome



BULLSEYE—Three rings of falsework hold three opposing pairs of truss-supported form segments. Two sets of travelers will rotate forms around the steel tower at center as concreting goes full circle.



ONE AT A TIME—to keep loads on falsework balanced, contractor pours one 15-deg dome segment at a time with a team of three cranes.

IT LOOKS LIKE A FLYING SAUCER, and it has offered some out-of-this-world construction problems for the contractor. That's the University of Illinois' Assembly Hall at Urbana.

Felmley-Dickerson Co. of Urbana and Bloomington is the general contractor on the $7.8-million project. The job calls for carefully engineered falsework, tricky form moves, and a sculptor's touch in concreting.

When completed, the Assembly Hall will resemble two saucers, one inverted over the other. A ring of 48 concrete buttresses support the corrugated shell that forms the lower saucer. A 9-in.-thick post-tensioned edge beam at the junction of the upper and lower shells support the 400-ft-dia dome, which is made up of 24 identical folded plate segments.

The dome arches 62 ft from spring line to crown, which is 130 ft above the floor of the auditorium. Each dome segment measures 52 ft at the edge beam and tapers to a width of 6½ ft at a concrete compression ring at the center of the dome. Maximum depth of corrugations in the folded plate roof is 7½ ft; average depth is 3 ft. Thickness of the valley and ridge sections varies from 7½ to 13½ in. The 3½-in.-thick connecting webs are set at a 45-deg angle.

Felmley-Dickerson made forms for six 15-deg segments of the dome. These were fabricated atop steel bar trusses that span between falsework.

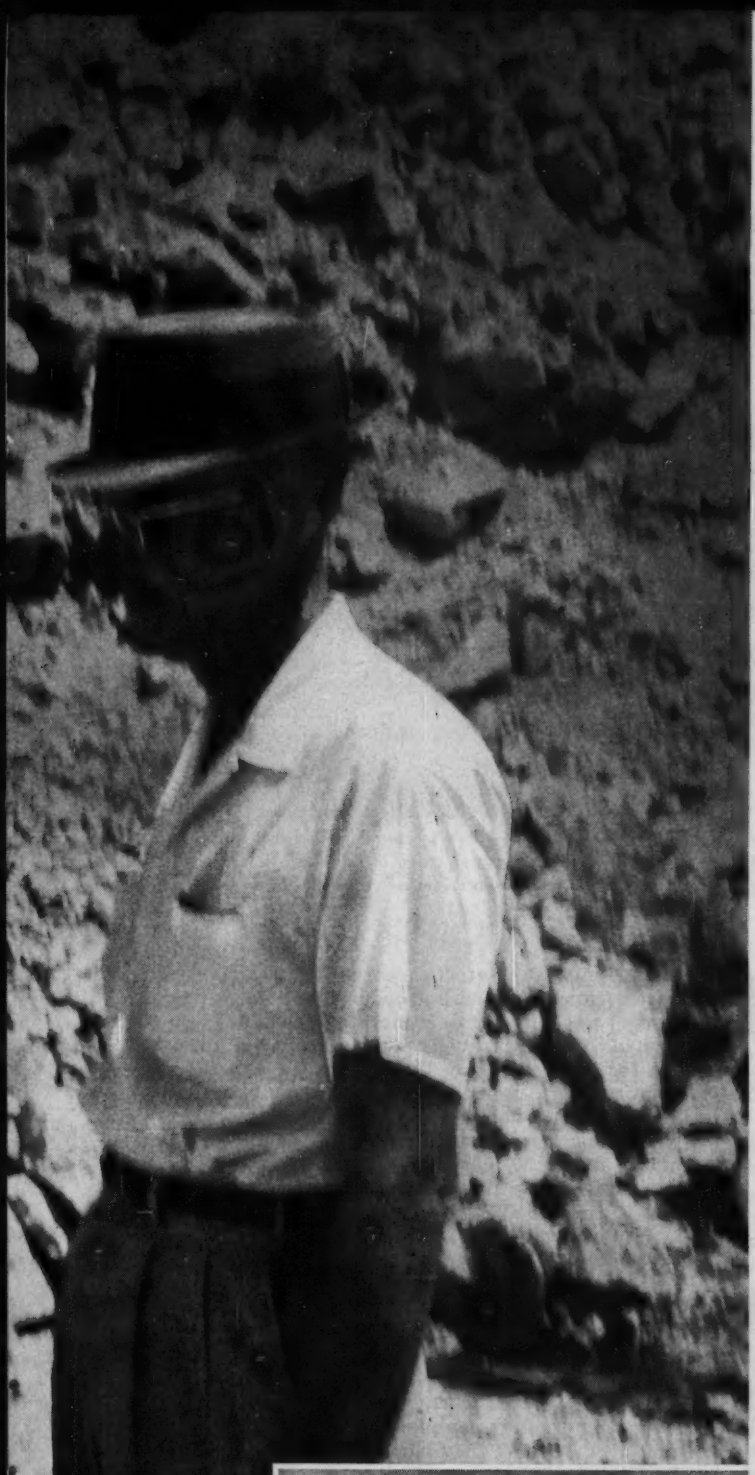
The falsework consists of both fixed and movable units. The fixed falsework consists of three concentric rings: a 100-ft-high steel tower at the center; a 260-ft-dia ring made up of trussed timber; and, at the outer edge, shoring left in place beneath the corrugated seating shell. The movable falsework consists of four timber travelers set at the midpoints of the form spans.

continued on page 120

EXCAVATION—Crawler-mounted Insley crane with ⅜-yd clamshell cleans up around the trench dug to hold ring footing for buttresses.

BUTTRESSES—A set of six insulated forms permitted contractor to place concrete for the 48 supporting buttresses through a cold winter.

This is
AMERICAN OIL COMPANY
in action



Why this bearing runs cooler with AMOCO Lithium Grease is explained by American Oil representative Harold Jansen to Raid Brothers' superintendent Kenneth Pearson and partner Melvin Raid.

Result of first experience with American Oil Company service—down-time reduced

BY HAROLD JANSEN

About the Author. Harold Jansen has eleven years' experience giving lubrication technical assistance to customers. He has a degree in engineering to qualify him for such work in addition to having graduated from the Company's Sales Engineering School.

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Bearings were running hot in the rock-crushing equipment at Raid Brothers aggregate plant, Denmark, Iowa. This reduced the speed at which the equipment could operate.

Our lubrication specialist who called on this account before me recommended a switch to AMOCO Lithium Grease. The grease reduced bearing temperatures, got the bearings running smoothly, upped operating speeds and plant efficiency and cut down-time. The success with this grease, and with the technical assistance we were able to render here, resulted in Raid Brothers converting their entire plant, including automotive equipment, to American Oil products.

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You can get this kind of technical help and performance improvement from your equipment. Just call the American Oil Company office near you.

Quick facts about **AMOCO Lithium Grease**

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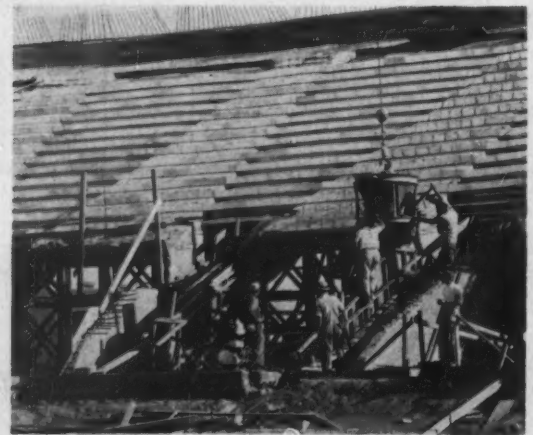
Seating Corrugations Enclose Tower That Holds Dome Cap

TOWER AT CENTER—Steel tower at dome's center will bear brunt of load until circular edge beam at junction of upper and lower shells is post-tensioned. Tower weighs 100 tons.

FORMING CORRUGATIONS—Lower bowl forms undulate between buttresses. Shoring is left in place to form outer ring of fixed falsework for dome. Concrete pads and WF sills hold shoring.



POURING LOWER BOWL—Crane-operated bucket pours concrete for seating corrugations. Risers span between buttresses to hold seats. Earth plug at center will be excavated after completion.

RING ATOP TOWER—Crew places reinforcing that will tie concrete compression ring at crown of dome into folded-plate dome segments. Stairway provides safe access to top of tower.

The contractor erected three truss-supported form segments on each side of the dome. After pouring a segment with cranes, they drop the form segment onto the travelers and move it into position for the next pour. The carefully planned sequence of form erection, pouring, moving and re-erection nets a completed segment twice a week.

F-D broke ground at the site in May of '59. They moved about 150,000 yd of earth to level the area and excavate for the bottom bowl. The Assembly Hall is embedded 24 ft below grade.

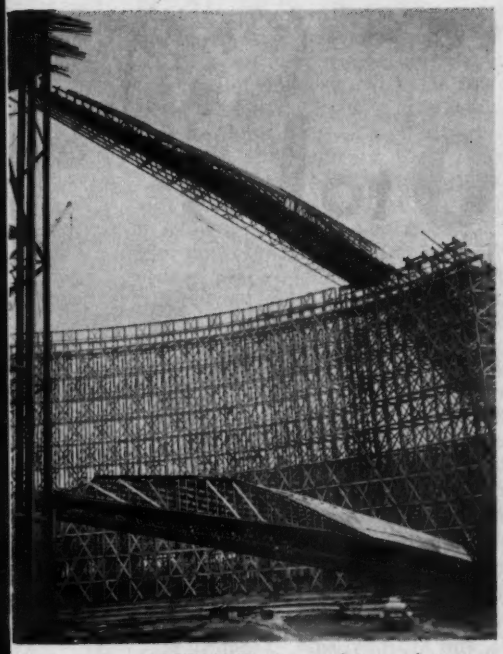
They excavated a 75-ft-wide, 30-ft-deep trench for a circular ring footing to hold the buttresses. The contractor elected to leave a 215-ft-dia plug of earth at the center of the dome to reduce the height of falsework. The 18,000 yd in this core will be excavated when the dome is completed.

After pouring a 3½x16-ft footing in the circular trench, F-D started work on the 48 buttresses. The contractor used six complete sets of forms. By insulating the forms, they were able to pour through the winter months.

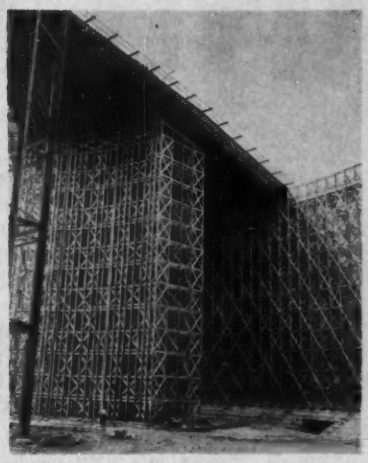
While buttresses were being poured, Mississippi Valley Steel Co. erected the 100-ft-high steel falsework tower at the center of the structure. The tower took 100 tons of structural steel. It rests on a 2½-ft-thick, 11-ft-wide ring footing. Designed to carry a load of 1,500 tons, the tower will bear the brunt of dome support until the edge beam is post-tensioned.

Next, a crew poured a 4-ft thick concrete compression ring atop the central tower. The hub of the dome's 24 segments, the ring has an inside diameter of 21½ ft and an outside diameter of 43 ft. It took 162 yd of lightweight concrete.

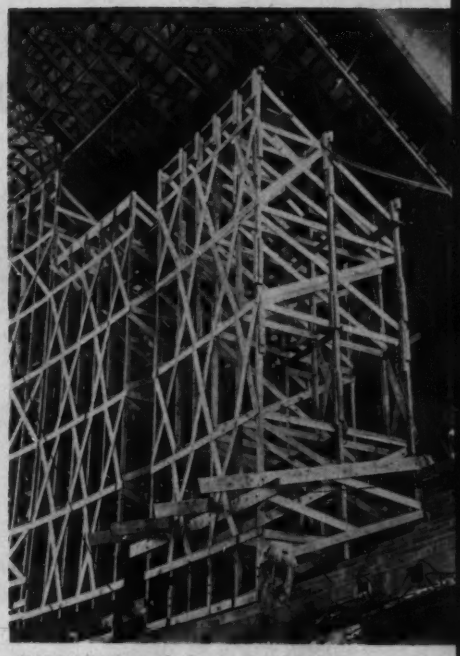
Falsework Holds Forms, Travelers Move Them Around



OPEN-WEB—Trusses that span between rings of falsework are 54 in. deep. Total of 172 trusses hold six form segments.



TRAVELER—Wedges at bottom block up 90-ft-high traveler, but wheels will move it to assist in rotating the form segments about dome.



CARRIER—Tower built atop seating corrugations moves outer span of form segments. It fits under 7½-ft-deep folds of dome.

Work started on the seating corrugations as soon as the buttresses were completed. F-D poured the 7-in.-thick corrugations in 7½-deg sections over and between the buttresses. Timber shores consisting of 6x6's atop 3x5-ft concrete footings and 14-in. WF sills held the forms. Shoring was spaced at 5-ft centers and laterally braced every 10 ft. This shoring was left in place to serve as part of the falsework system for the dome.

To complete the dome's fixed falsework, the contractor next erected a concentric tower made of trussed 4x4's 130 ft from the center of the dome. The seating corrugations support one leg of the ring and beams atop the buttresses support the other leg.

A Koehring 330 Sprawler crane erected the steel trusses that span between the three falsework towers and hold the forms. The open-web, welded-steel trusses were ordered from Bethlehem Steel Co. in two lengths: 120 ft and 60 ft. At each end of a truss, I-beam extensions rest on 6x8-in. headers atop the falsework towers. Trusses have a maximum depth of 54 in.

In each 15-deg dome segment there are 16 trusses at the lower end and 10 trusses at the center span where the width narrows. Altogether, the contractor ordered 172 trusses for the six form segments.

Formwork for the first dome segment was fabricated over trusses on the ground and hoisted into place by crane. Other form segments were fabricated in place.

To fabricate the folded-plate dome forms, carpenters first bolted 2x4 nailers atop the trusses. Next, they spiked 2x10-in. plywood decking to the nailers at 6-in. intervals. They covered openings between the strips with screening to catch hand tools. The crew then tailor-fit each folded-plate element of the segment with plywood sheeting cut to complicated shapes and miters.

After fabricating forms, workmen lined the contours with sheets of Insulrock insulation, which forms the underside of the dome. Galvanized metal clips cast in the concrete held the insulation in place after the forms were stripped.

Next, the contractor erected the four travelers that move the forms from segment to segment. Two 30-ft-high travelers were erected on opposite sides of the dome 162 ft from the center. Two 90-ft-high towers set 77 ft from the center on each side completed the movable falsework system.

Made of 6x6 timber, the travelers rest on wedges but are fitted with 12-in.-dia wheels for form moves. They roll on a 16-ft-wide bed of 3-in. lumber set on a carefully leveled path built up of coarse gravel and sand.

Falsework and forms required more than 800,000 bd ft of lumber and 150,000 sq ft of plywood. Dome forms alone accounted for 192,000 bd ft.

To complete prepartions for the first dome pour, a crew installed 32 tons of reinforcing fabricated by Jones & Laughlin to exact tolerances.

F-D explored several possible methods of placing dome concrete, but finally decided to use three cranes. A Koehring 330 Sprawler with a 100-ft boom and a 20-ft jib was stationed inside the bowl. Two cranes were stationed outside the bowl—a Koehring 545 with 110-ft boom and 20-ft jib and a rented American with 120-ft boom and 30-ft jib.

continued on page 123

"I would rather have a TELSMITH 10 to 1"

Says
LEO FRANK
of
Frank Bros.
Milton Junction
Wisconsin
Aggregate Producers

P-25-761

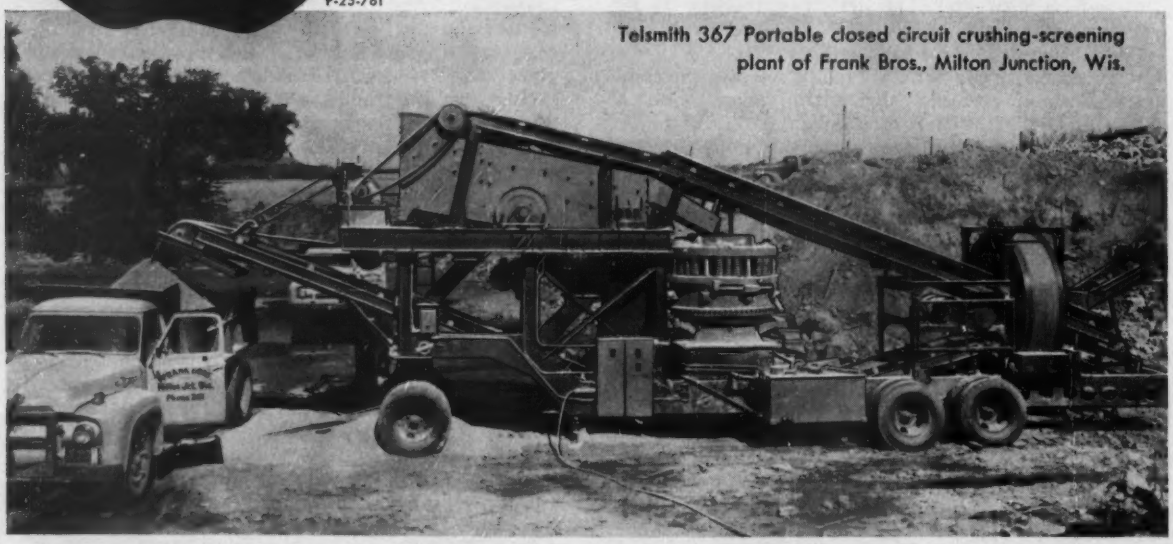
♦ You never saw a man more fired up about a crushing plant. "I would recommend this Telsmith 367 Gyrasphere portable plant to anyone," says Mr. Frank. In four years, and upwards of 400,000 tons of actual crushing, the Telsmith Gyrasphere required *no replacement of parts* and *not one cent for maintenance welding.*

♦ Mr. Frank had the unique experience of crushing with his Telsmith 367 along side another nationally known plant in the same pits. The Telsmith plant proved to be far superior to the combination jaw and roll crusher machine in both performance and economy. Cost per ton crushed was considerably less than that of the dual crusher type.

♦ His plant mechanic, Jim Murphy, said "Telsmith is *no maintenance problem,* while you can't keep the other crusher operating without working on it regularly."

♦ Compare these advantages and you'll see why Mr. Frank prefers Telsmith 10 to 1: lower initial cost; maintenance costs cut to the bone; big ratio of reduction (6" down to ¾") for high capacity crushing. All this means one thing—*highly profitable performance.*

♦ Call your Telsmith distributor, or write direct for Bulletin 276. See for yourself why Frank Bros. are so high on Telsmith's 367 Gyrasphere portable plant.



Telsmith 367 Portable closed circuit crushing-screening plant of Frank Bros., Milton Junction, Wis.

SMITH ENGINEERING WORKS

512 E. CAPITOL DRIVE, MILWAUKEE 1, WISCONSIN

DIVISION OF Barber-Greene

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Outside cranes handled 1-yd Johnson buckets while the Sprawler inside swung a ¾-yd bucket.

The contractor pours one dome segment at a time. Balancing vertical loads for a single section is no problem, but it would be for two. Pouring and finishing each 120-yd segment is an all-day job. The first segment took 12 hr to complete. Later, production averaged out at 15 yd per hr and a single 8-hr shift is now sufficient.

After the first few pours, the contractor changed the pouring pattern. Initially, the two outside cranes placed concrete directly from buckets at the bottom of the segment. When outside cranes reached their limit about halfway up the slope, the inside crane took over. Short chutes set atop the ridges of the folded plates directed concrete into the middle section of the form segment.

To speed pours, the contractor now places concrete with two cranes simultaneously, starting at each end and working toward the middle of the dome segment.

Because of the considerable weight of the forms, there is no appreciable uplift during the pours. Forms sometimes move about ⅛ in. at the start of a pour, but as concrete fills the forms they quickly settle down. The contractor suspends calibrated measuring rods from the form-supporting trusses to observe form movement.

A crew of 25 is used for each pour. After careful vibration, workmen hand trowel the dense concrete to a smooth finish. A portable water tank provides a fine spray for the finishers.

Job-built screed bars installed atop the forms help guide the finishers, but final touching up is done mostly by eye. Superintendent Ed Maliskas eyeballs the folded plate corrugations as they are finished and uses a Homin voice gun to direct crews that hand-sculpture the final alignment.

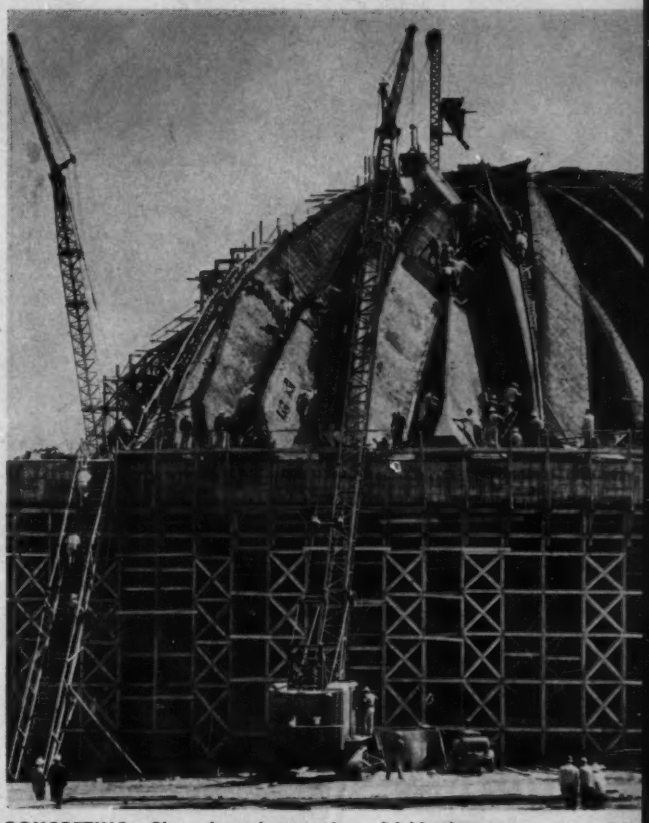
The crew covers the watered surface with Visqueen polyethylene film for the curing period. The plastic film maintains moisture for as much as seven days. After curing, the dome segments are coated with DuPont Hypalon waterproofing compound.

Transit-mix trucks deliver the 7½-bag concrete mix from a local plant. Additives include Darex for air entrainment and a Pozzolith retarder. Lightweight Materialite aggregate reduces the weight of the wet mix to 106 lb per cu yd.

After pouring the first two pairs of dome segments, the contractor moved the first two form segments while pouring the third pair. The pouring sequence calls for rotating the form segments about the center of the dome.

It took a crew of 10 men about two days to make the first form move. They moved the outer form segment first, then the inner segment. They knocked out supporting wedges holding the outer traveler tower and rolled it 30-deg clockwise. Then, workmen built up a carrier tower, 8 ft lower than the traveler, under the form segment.

The difference in height of the towers was necessary because of the deep corrugations in the folded plate roof. Crews then lowered form-supporting trusses—six at a time—onto the carrier with hand winches. The carrier moved the form segment to the next station, where they were erected atop the fixed falsework towers by cranes.



CONCRETING—Chutes braced atop ridges of folds place concrete so the crew has minimum of hand shoveling. Screed bars guide finishers, but crew eyeballs final alignment.

The trusses were then anchored at proper elevation and the process repeated for another set of six trusses. This was followed by a set of four. With all trusses repositioned, the carrier was rolled away and the traveler repositioned at midspan.

The contractor used a different method to move the inner form segments at the center of the dome. Instead of building a carrier (in this case it would have had to be about 90 ft high), a crew knocked down the top 8 ft of the traveler tower at midspan to make it do double duty. Winches lowered trusses directly onto the traveler and a crane moved the unit into final position. Then the traveler was rebuilt at the top.

The contractor now is averaging two pours per week. A complete cycle for each set of forms takes about 12 days with a 5-day curing period. F-D expects to complete concreting the dome this fall.

After completion of pouring, the Preload Co. of New York will post-tension the edge beam with high-tensile wire. A 10-ton winding machine powered by a 200-hp engine will wrap about 598 mi of wire around the edge beam.

After post-tensioning is completed, F-D will remove the falsework supporting the dome. Then they will excavate the core of earth remaining at the center to make way for completion of the interior of the auditorium.

Project manager for Felmley-Dickerson is Richard Foley; superintendent is Edward Maliskas. William S. Posten is resident architect for Harrison and Abramovitz of New York, the architects.

610

Works faster, deeper where compacting is toughest

Works *faster* because only the Galion 9-Wheel Pneumatic Tire Roller has Equa-Matic front-end design with exclusive triple-point steering suspension. Automatic balancing action lets this heavyweight go surefooted over unlevel, irregular bases despite its exceptional compacting results . . . helps cut down on costly extra passes.

Works *deeper* because each of the five steering wheels is free to move in *four* directions, virtually "kneading" the surface. This way Galion overcomes bulging or "pyramiding" of base materials to save you valuable working hours. Up to 3000 lbs. wheel load provides highest compaction results.

When your job calls for fast, deep compaction over tough base materials, call in your Galion distributor. He will furnish full facts on the Galion Pneumatic Tire Roller. Or, send for data bulletin No. 434-A.

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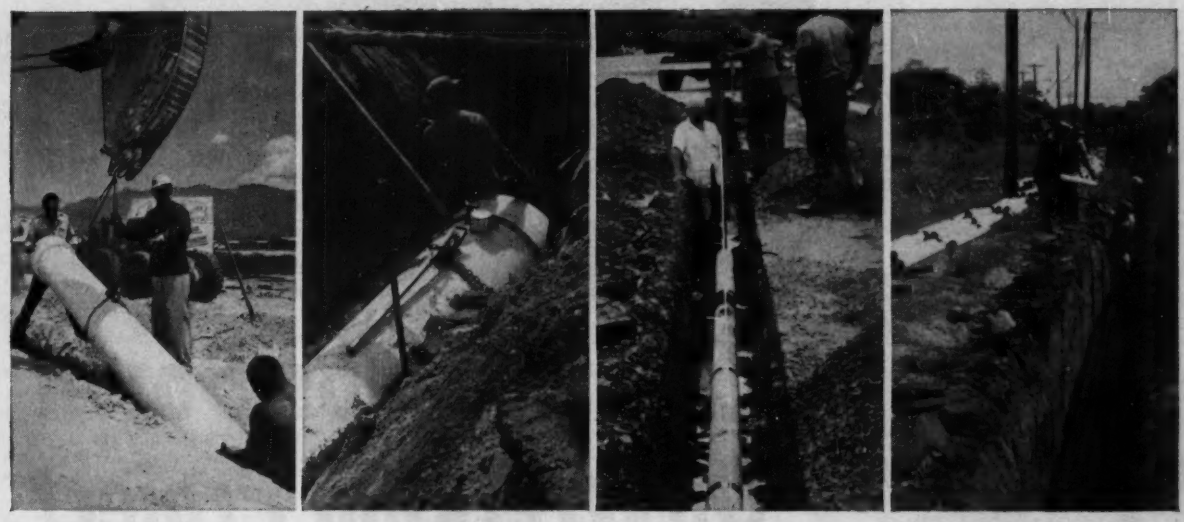

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Transite® speeds any water line installation. Its long lengths are easily and quickly handled. The Ring-Tite® joint means a tight seal at every coupling in the line! The result: a quality job at low cost!

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Transite Underdrain Pipe means savings wherever subsoils must be stabilized. This new perforated pipe means savings to contractors, for Transite's long lengths, fewer joints, low material cost all add up to more profitable jobs.

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SALVAGE — Salvageable material is spotted blind at ground level. Operator, next to climbing crane's tower, has a portable control box. He is helped by a signalman who is on the ground with earphones and mike.

HELPER—Linden hoists Bantam crane over 20x50 ft elevator shaft on roof. The Bantam has a 1,000-lb breaking ball for shattering floor slabs and pulls iron around roof for unloading.

Crane Climbs Down On Wrecking Project

A CLIMBING CRANE is climbing down instead of up on a 13-building demolition job in the heart of Chicago's loop. Cleveland Wrecking Co. of Cincinnati is using a Linden crane as a materials handler on the 25-story Palmer House Garage, tallest building in the two-block area now being razed.

The crane is used primarily to spot salvageable material at ground level outside the building. A single hoisting engineer on the floor being demolished operates all the crane's motors through a portable control box. A signalman with earphones and a microphone helps him spot loads blind on the ground.

Cleveland first razed all but four of the buildings with conventional wrecking methods to make room for debris-hauling trucks and other heavy equipment. Remaining were the garage, two 17-story buildings, and an eight-story theatre.

Acquired from Arrow Contractors Equipment Co., Chicago, the Linden climbing crane was brought to the site disassembled. The crane was built in Denmark and imported by B. M. Heede, Inc., of Long Island City, N. Y. Manageable components were hauled to the roof up a shaft used as a rubble chute. The rest of the crane components were hoisted to the roof by a Gardner-Denver 3-ton air tugger, and the crane was assembled in one day by a small crew.

Climbing cranes ordinarily are installed in elevator shafts for high construction work. The shaft of the parking garage, however, measured 20x50 ft and would have required an impractical amount of bracing.

Instead, 5-ft-square holes are cut in each floor slab. Steel collars are installed in these to reduce the cut-out to 4 ft 3 in. square. The crane's mast, approximately 4-ft-square, is installed in these holes and wedged tight with oak shims.

The crane has a 60-ft tower and an 84-ft jib. The counter-jib extends 41 ft and carries 2,500 lb of concrete slabs as counterweight. A 20-hp hoist motor and 7½-hp slewing motor also ride the counter-jib, bringing the total ballast to 7,500 lb.

Lifting capacity of the crane is 10,000 lb with the trolley at 33 ft on the jib, 7,700 lb at 42 ft, and 4,400 lb with the trolley at the end of the jib. The trolley is powered by a 2-hp motor.

The base of the tower, which usually is positioned two floors below the demolition work, is supported on two wide-flange I-

continued on page 130

Can your loader handle these six jobs?...

Grade with motor grader accuracy using the 4-in-1's "carry-type scraper" action—as this owner is doing, fine-grading a parking area to exact specifications. Operation "boils in" excess dirt, for easy removal.

Exclusive 4-in-1 clam action lets you grab, lift, and load heavy, unwieldy objects like stumps, boulders, and concrete slabs—without any need of hand work. You clam-on, lift, and release the load, hydraulically.

Simply open the clam, set "blade" segment to cut—and the 4-in-1 doubles for a full-sized 'dozer in capacity, working range, and control accuracy. Only "hand work" to do is move the hydraulic control lever.

SURE, if it's a Clam Action 4-in-1!

Clam-handle sticky materials with the 4-in-1—even in conditions that clog old-type buckets. Exclusive 4-in-1 bottom-dumping uses the gravity pull and clam "pull apart" action for positive self-cleanout!

Only clam-action 4-in-1's provide back-drag action — speeding masonry wall demolition here — also widely used for bank-grading, ditch-cleaning, and pulling down materials, quickly and efficiently.

Place the open clamshell over builder's scrap, rubble, isolated piles of loose materials — close the clam to fill the bucket, instantly, without "chasing" the material. And without any hand work, whatever!

Why limit the variety of jobs and conditions you can handle? Why limit your income to what an old-style "single-action" loader can earn you? Why be satisfied with anything less than 4-in-1 "equipment spread" utility—that multiplies profit-making capacity? Get positive proof! Let your International Drott Distributor demonstrate the 4-in-1 size you need! Five sizes available from ¾ to 3 cubic yards.

International Harvester Company, Chicago 1, Illinois
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INTERNATIONAL® DROTT®

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TD-25's *Full load, full pass ends load-dropping, track–*

PLANET-POWERED PUSH

—*stopping steering losses*

You Power-steer the International TD-25 by power-shifting either track. Full-time "live" power on both tracks, gives you full-profit production!

You make full-load turns without spillage — because Planet Power-steering eliminates load-spilling, load-limiting "dead-track drag."

With Hi-Lo on-the-go power-shifting, you shift down, to dig hard materials — shift up, to "run" with the load. When push-loading with the "25," you maintain solid contact on straight-away or curve — to speed heaping the bowls and get gear-higher "kick-outs"!

Exclusive Planet Power-steering makes the TD-25 the industry's only power-shifted 8-speed gear-drive, or 4-speed torque-converter tractor. And only the "25" is powered by the free-breathing, dual-valved 230-hp DT-817 turbocharged International diesel!

Compare bulldozing yardage delivered — time the push-loading advantages of the Planet Power-steered TD-25. Prove to yourself how "live-track" TD-25 push can multiply your "tight-bid" profits. Let your International Construction Equipment Distributor demonstrate!

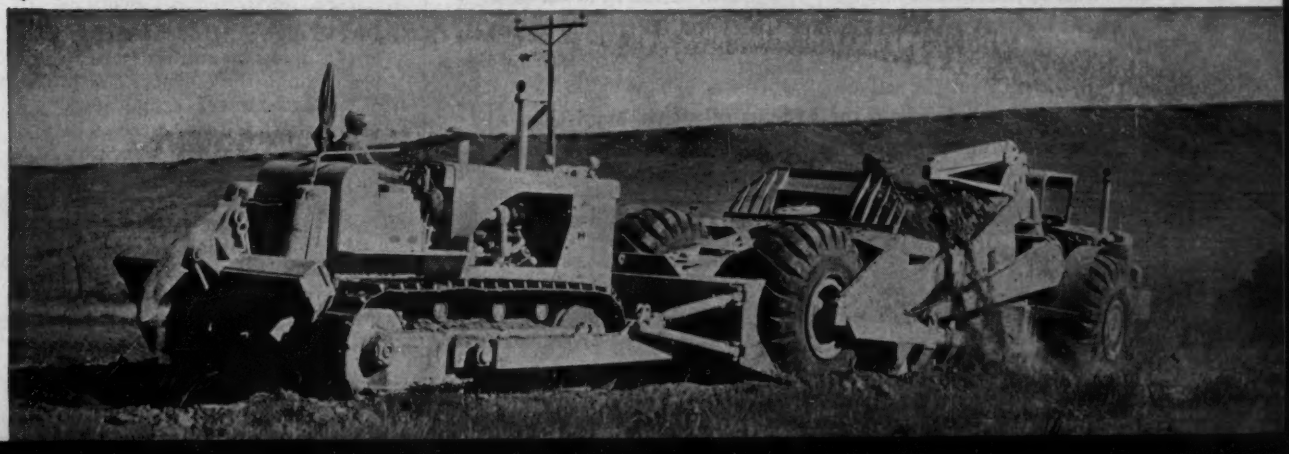
"Hanging a bench" on a mountainside, the TD-25 operator either upshifts the bank-side track — or downshifts the outside track. Then he makes full cuts under full power without "bank-nosing," rear-end skidding, or "lever fighting."

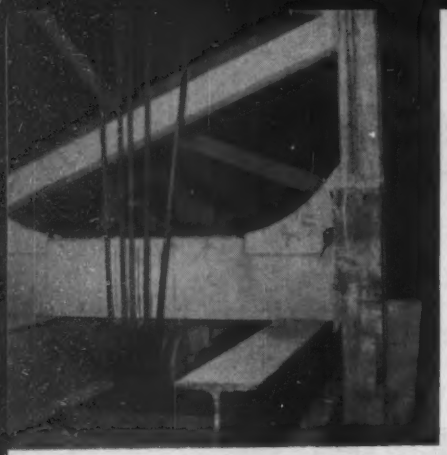
Moving thousands of tons of outcrop shot-rock for mountain road right-of-way, this TD-25 picks up and delivers its full loads without sluing or slipping. Reason: with Planet Power-steering you run one track in high, the other in low speed range to equalize offset loading. And you steer with full power on both tracks full time — to avoid load-dropping interruptions!

Power-gaining Planet Power-steering helps you heap-load scrapers in record time — right where clutch-steered pushers lose half their push! Power-shifting either track up or down keeps solid push-block contact on curves. Power-shifting up, on-the-go, gives gear-higher kick-outs than ordinary. And with 7.5 mph reverse, the "25" repositions faster than slower rigs!

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE





CLIMBING CRANE . . . *continued from page 126*

SUPPORT—Base of 17½-ton crane rests on I-beams placed over hole cut in floor. Beams are removed for lowering operations, and tower is supported by climbing assembly. After beams are replaced at lower level, the crane is winched down.

beams placed across the cut-out in the floor. These beams support the 17½-ton weight of the crane while it is performing its material handling functions.

When the crane is to be lowered, the climbing assembly is installed next to the tower on the floor where the demolition crews are working. The climbing assembly is mounted in a steel frame. Another steel frame is installed at the opposite side of the crane's tower. Each of these frames has a set of sheaves.

The climbing line, a ½-in. cable, comes off a winch in the climbing assembly, which has a 3-hp electric motor and reduction gear. This line passes over the sheaves in the frames and down to sheaves at the base of the tower. The tower has six sheaves on each side of its base. When the climbing line is reeved in the sheaves for lowering, a cradle with a twelve-part purchase is formed to support the tower.

With the tower supported by the climbing line, the two I-beams are removed from beneath the base. These beams are lowered through the elevator shaft and placed over a hole at a lower level. The crane is then winched down to its new position. The climbing assembly is removed for greater working space until needed for the next lowering cycle.

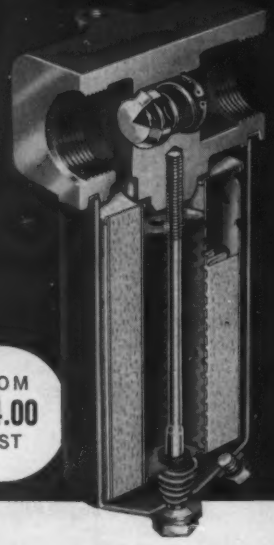
The crane is also being used to move equipment on the roof, including a skid-mounted 250-60 Schield Bantam crane. The Bantam has a 1,000-lb breaking ball to shatter floor slabs, and pulls iron around the floor for unloading. If needed in another area, the Bantam is picked up by the Linden crane and spotted on the opposite side of the elevator opening.

Other equipment on the job includes a 600-cfm Ingersoll-Rand Gyro-Flo compressor for powering demolition equipment, and a 1-yd Hough HAH front-end loader that picks up and jettisons rubble through the elevator shaft.

A Pecco tower crane with a 210-ft reach is being used to handle materials in the wrecking of the 17-story building and theatre. The electric Pecco rides 160-ft of 14-ft, 5-in.-gage track.

After demolition is completed, the A. L. Jackson Co. of Chicago will erect a 30-story, $35 million Federal Court House on the site.

KEEP PEAK HYDRAULIC PERFORMANCE WITH THIS NEW, BETTER FILTER



- Removes contaminant particles of low micron size
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FROM $24.00 LIST

Elimination of foreign particles in modern, high pressure hydraulic circuits is essential. Failure to do so can damage expensive equipment or, at best, seriously impair efficiency. Excessive down time, out-of-line repair costs and reduced output are inevitable results.

Two-stage filtration is provided to trap and retain particles over 8 to 10 microns in size with full flow filtration at lower flow rates. At higher flow rates, increased pressure differential across the filter opens the poppet valve (see cut away above) to by-pass part of the oil over the valve.

For more details about the benefits of micronic particle oil filtration on your equipment write for Bulletin I & M-5111.

9796

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When you need "pull" power as well as "push"...

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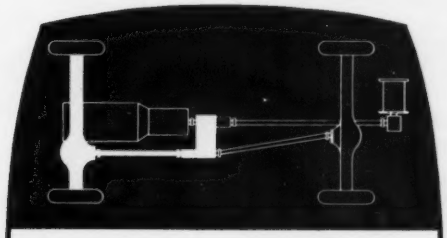

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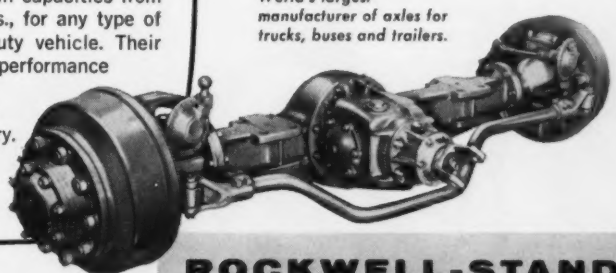
There are many times when you need the extra power of front driving axles in rugged off-highway operations. And only the complete line of Rockwell-Standard front driving axles and transfer cases best meets every requirement for these multi-wheel drive assemblies.

For more than 50 years, Rockwell-Standard has supplied components for multi-wheel drives. Rockwell's design, engineering and manufacturing experience—plus advanced research and testing facilities—assures highest quality. Use vehicles with multi-wheel drive for peak off-highway performance . . . *and specify Rockwell-Standard!*

World's largest manufacturer of axles for trucks, buses and trailers.



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Transmission and Axle Division, Detroit 32, Michigan

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EXPLOSIVES

At this Maryland quarry, Ammodyte,® a low-cost cartridged explosive, was used to obtain maximum fragmentation and displacement of this tough, blocky granite gneiss. In the large photo above, notice how the toe is sweeping clear, resulting from well planned bottom initiation with Rockmaster® millisecond delay electric blasting caps. The resulting muck pile is properly laid out for easy, efficient digging.

ENERGY...

Are you aware of the many ways it is cutting costs all along the line? . . . Boosting production? . . . Increasing life of heavy equipment? . . . Allowing more efficient use of total man-hours?

Cheaper blasting materials, new blasting techniques, and improved drilling equipment, have reduced the cost of explosives energy to the point where it is doing work formerly reserved for mechanical equipment. And doing it cheaper, faster, and more efficiently.

In the Maryland quarry shown here, achieving good breakage was a difficult problem. This granite gneiss is tough and blocky. And production demands couldn't wait for drop balling or a blocked crusher. Working with the Atlas Representative, these profit-minded operators modernized their blasting techniques.

By adjusting hole diameter, burden and spacing, and utilizing the wallop of low cost Ammodyte,® these operators are gaining breakage and displacement never achieved before. Production speeds have been increased because they have been able to dig shots quicker and easier and gain maximum crusher production. In the process, they are realizing real savings in maintenance and wear on crusher, dipper teeth, wire rope, and truck bodies.

In coal stripping, other alert, up-to-date operators are using explosives energy to accomplish new tasks. Explosives force is being used to move up to 50% of the overburden directly onto the spoil pile. Mechanical handling costs are reduced, coal is uncovered more rapidly.

In open pit ore mining, explosives factors are being designed to gain additional fragmentation. Much of the material by-passes the primary crusher. Production is speeded, overall costs lowered.

In construction, contractors are finding that explosives energy can save them unwelcome maintenance costs on valuable equipment, and accomplish work faster, more efficiently.

In these times of change, the economics of drilling and blasting have changed also. Looking for ways to reduce blasting costs alone is not enough. The real savings come when you look at explosives energy as a way to reduce overall operating costs.

For a closer look at some of the ways explosives energy can lower your costs, investigate Atlas' full line—the only full line of ammonium nitrate and explosives in the industry. Expanded plant facilities are now in production at Joplin, Mo. and Reynolds, Pa., to assure ready availability of all products. And to give you faster, more flexible local service, expanded distribution facilities are being established coast to coast.

Call in your Atlas Representative. His experience with the newest advances in explosives, blasting agents, and blasting techniques can help you measure the relative economy of explosives energy vs. mechanical energy for your particular operation. Ask him about it. Or write directly to:

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ATLAS EXPLOSIVES

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It's just as important to avoid loss as to make profits. Heller has wide sources of credit information. Often, we are able to steer clients off risks they shouldn't take, or okay risks they'd otherwise pass up. That's one element of Heller financing service that's worth much and costs you nothing extra.

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GOING UP—Manually operated hydraulic pump delivers equal amounts of pressure to each of four jacks that rest on top of the steel girder and push against an I-beam in the concrete column. Man in background checks the column elevation with a surveyor's transit placed on the floor away from column being jacked.

Jacks Raise Structure to Keep Concrete From Cracking

COMBINING structural steel and reinforced concrete turned out to be a tough job on a ten-story Manhattan parking garage that will also house the new Toots Shor Restaurant.

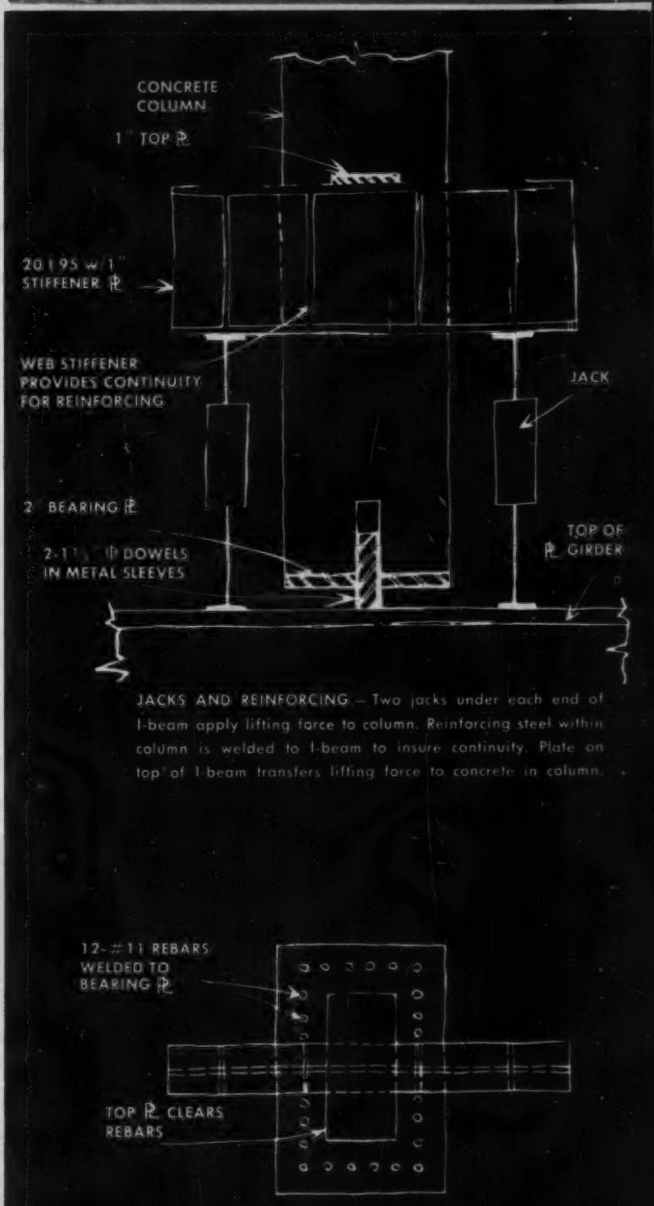
Basically the structure is made of poured-in-place reinforced concrete columns and waffle-type concrete floors. But floors in the restaurant area are formed with steel plate girders that span up to 46 ft and eliminate structural columns in the dining rooms.

Above the restaurant, five concrete columns had to be erected atop the plate girders in the middle of their spans because of the shorter span of the waffle floors in the garage area. Other concrete columns were erected on the ends of the plate girders.

As the contractor, H.R.H. Construction Corp. of New York City, completed each new concrete floor, the added load deflected the plate girders. Because excessive deflection would crack the concrete in the structure above, the contractor jacked up the concrete columns to counteract the deflection.

Jacking took place after the eighth floor was completed. By that time the steel girders had sagged almost ¼ in., which was the maximum allowable deflection. Jacking the concrete columns up from

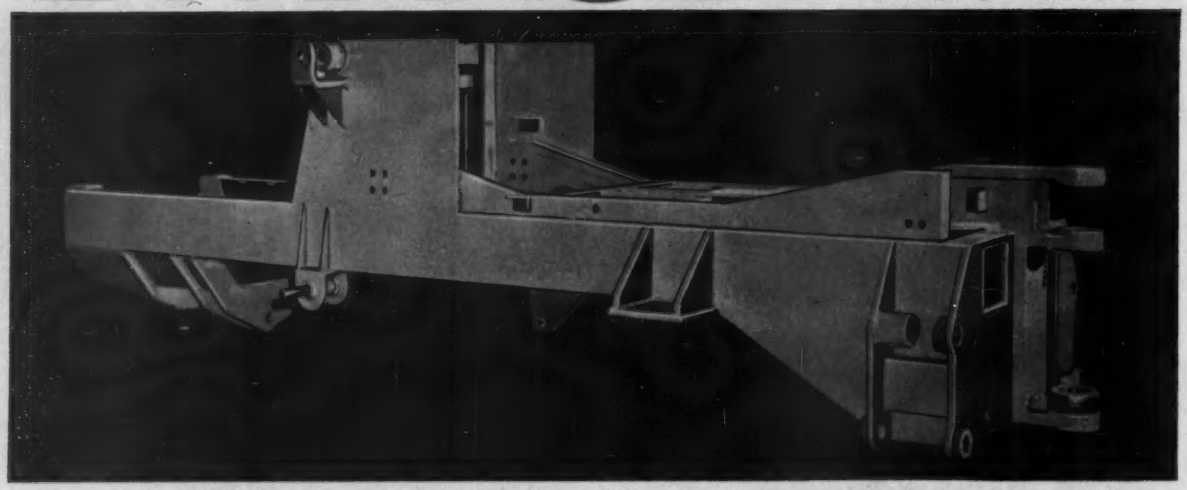
continued on page 138


CONCRETE COLUMN
1" TOP ℄
20 I 95 w/ 1" STIFFENER ℄
WEB STIFFENER PROVIDES CONTINUITY FOR REINFORCING
JACK
2 BEARING ℄
2-1¼" ⌀ DOWELS IN METAL SLEEVES
TOP OF ℄ GIRDER
12-#11 REBARS WELDED TO BEARING ℄
TOP ℄ CLEARS REBARS

JACKS AND REINFORCING — Two jacks under each end of I-beam apply lifting force to column. Reinforcing steel within column is welded to I-beam to insure continuity. Plate on top of I-beam transfers lifting force to concrete in column.

Wherever stress and strain are toughest

"DYNAHOE" IS STRONGEST



Great strength is centered in this massive Foundation Frame

Learn the full meaning of *completely integrated machine construction.*

Learn what *complete, balanced integration* of loader, tractor and backhoe can mean on *your* job in terms of greater machine output, more versatile job utility, decreased maintenance, eliminated downtime, and longer machine life.

See the "DYNAHOE." Compare it part for part with any other combination of tools now being used for Backhoeing, Backfilling and Loading operations. Examine the individual integrated components. Note the BALANCE between loader and backhoe and the BALANCE of weight over both axles. Note the BALANCE in construction which provides greater "keep going strength," gives greater power and all-day efficiency, and gives endurance where digging conditions are toughest.

See how all stress and strain is transmitted throughout the entire machine by the massive foundation frame. This frame puts the WHOLE MACHINE behind every digging and loading action! There are no weak, brittle spots for breakdown in the "DYNAHOE."

Be sure to note the OVERSIZE PINS used throughout . . . the special heat exchanger for Backhoe, Loader and Torque Converter which assures ALL DAY WORK EFFICIENCY. Note the 75 H.P., 6 cylinder engine . . . the torque converter . . . the power shift transmission . . . the heavy duty planetary rear axle. "DYNAHOE" is available in gasoline and diesel models.

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Here's the Drill to beat!

New D-475 HIGH PRODUCTION MACHINE

- **MOST HOLE PER SHIFT**
- **MOST RUGGED DESIGN**
- **MOST POWERFUL ROTATION**

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A GREAT MACHINE NOW EVEN GREATER

The new D-475 drifter was designed to give you a drill in the 2-¾ to 4 inch hole size that will increase penetration up to 35%, stay in operation longer and provide a balanced rotation not subject to the whim of the operator. This heavy-duty super powered drill, with built-in reversible rotation, has a new, more efficient double kicker port spool valve that enables it to provide the full power of which the Gyro-Flo 600 cfm compressor is capable.

New integral rotation with rugged longer-lasting full pawl engagement gives the right combination of rotation and impact for maximum drilling efficiency, gives longest steel and coupling life using standard SPI-RAL rods and prevents over-rotation which cuts bit life. Drill rotates only on up-stroke of piston, avoiding rapid bit wear from rotation during impact. Larger, 9/16" straight-through blower tube admits more air for more effective hole cleaning.

These and other new features enable the new D-475 to increase production, reduce maintenance and cut rock excavation costs. Ask your Ingersoll-Rand representative for the complete story, or send for a copy of Bulletin 4224.

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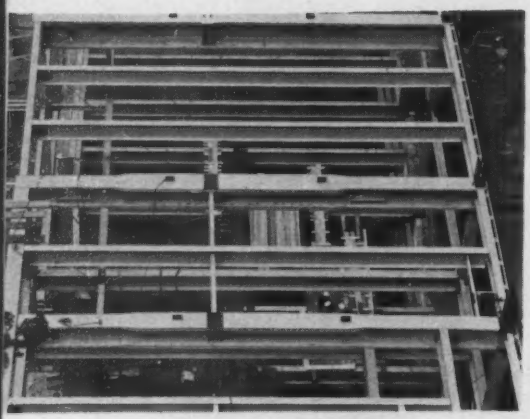
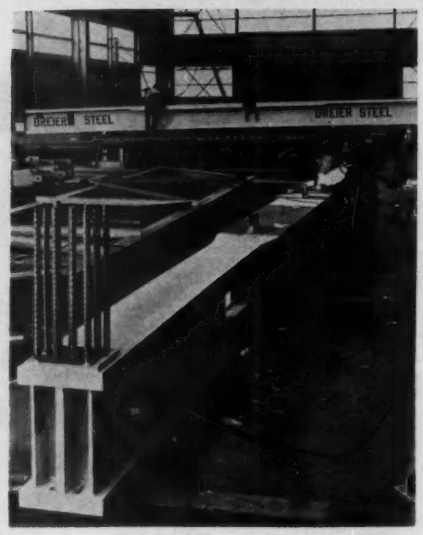


GIRDER ARRANGEMENT (left)—The five concrete columns that require jacking will sit atop the heavy plate girders at mid-span. The girders eliminate columns in the restaurant's dining rooms.



GIRDER FABRICATION (right)—In the fabricator's shop, a welder attaches dowels to girder flange. They prevent the columns from moving sideways during jacking. Bars on girder end are for columns that do not require jacking.

JACKS RAISE STRUCTURE . . . *continued*

the girders and inserting shims reduced the deflection to within safe limits.

Jacking was specified by the structural engineers, Seelye, Stevenson, Value & Knecht of New York, and details of the operation were worked out jointly with the contractor. Careful planning preceded the jacking and preparatons for it were made during fabrication of the girders and constructon of he fourth floor.

Dreier Structural Steel Co., Inc., of Long Island City fabricated the plate girders, which weigh as much as 25 tons each. For concrete columns on the ends of the girders, Dreier added a bearing plate with reinforcing rods tack-welded to it. For each column in the middle of the plate girder spans, a pair of dowels was added to the girder flange to keep the columns in place, yet permit them to move vertically during jacking.

After the girders were erected, a reinforced concconcrete floor was poured on top of them. For access to the girder flanges and column bearing plates during jacking, a 4-ft square was left out of the floor slab at each of the five column locations.

Each concrete column was poured on top of a 1½-

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between AMSCO and other hard rock track shoes

There's *more than just a little difference* between Amsco manganese steel hard rock track shoes and other brands. Amsco shoes are built to take the impact and abrasion of the hardest rock.

H. E. Lowdermilk Construction Company, Englewood, Colorado, and Espanola, New Mexico, specializes in rock work where the going is rough and tough. Standard track shoes for one of their HD21's *wore out completely* in as little as 270 hours. Amsco 26″ manganese steel track shoes were specified and 302 hours later wear was only 3/16″.

Mr. Howard Neff, mechanical superintendent for Lowdermilk, can actually measure the difference between the Amsco shoes and the ones they used to use. You will too. Just ask for Amsco shoes, available for all major makes of crawler tractors and in any special design you need.

Amsco makes a complete line of cast tractor parts, including end bits, replaceable sprocket rims, grouser bars and welding electrodes for buildup, repair and hardfacing.

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for Extremely High Production and Mobility

Everything — two big turbine type mixers, cement and aggregate bins, belt conveyors, batchers, fully automated control equipment (completely packaged) — every component on wheels.

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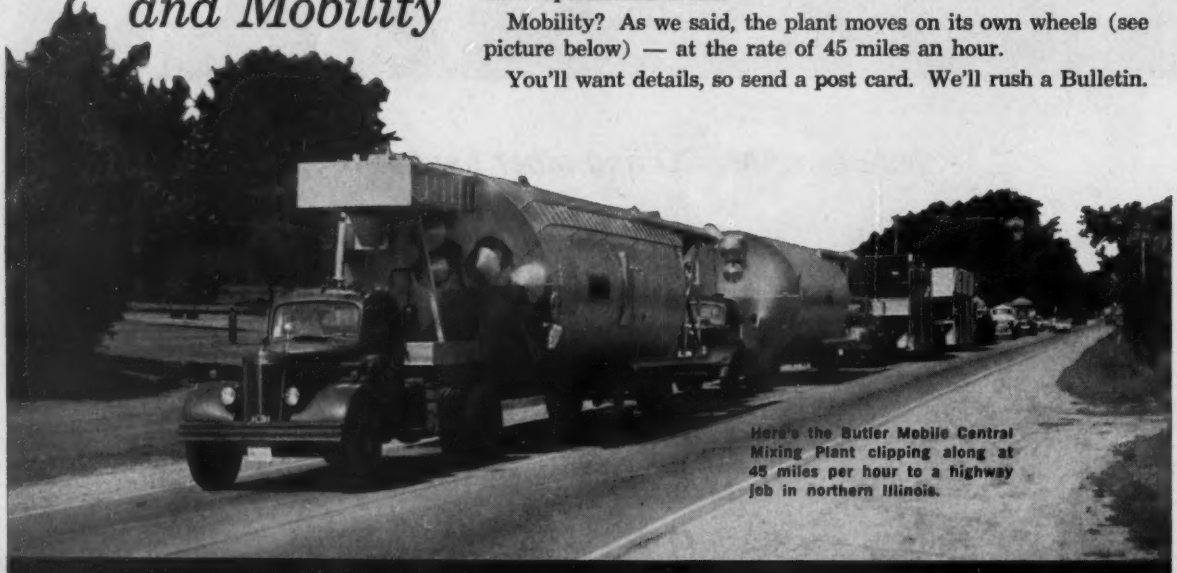
This one plant is engineered to replace 3 or more pavers and their operational crews.

Mobility? As we said, the plant moves on its own wheels (see picture below) — at the rate of 45 miles an hour.

You'll want details, so send a post card. We'll rush a Bulletin.



Here's the Butler Mobile Central Mixing Plant clipping along at 45 miles per hour to a highway job in northern Illinois.

BUTLER BIN COMPANY

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in-thick bearing plate. Two holes were drilled in the plate so that it would fit over the two 1½-in.-dia dowels welded to the girder flange. The dowels moved in a metal sleeve imbedded in the concrete and prevented the column from shifting laterally.

Twelve 1⅜-in. reinforcing rods were welded to each bearing plate and a short I-beam was added 4 ft above the column base. During jacking, the I-beams transmitted the force to the columns.

The I-beams are 20 in. deep and weigh 95 lb per ft. They are reinforced with 1-in.-thick web stiffeners and welded to the column reinforcing. A 1-in.-thick bearing plate welded to the top flange of each I-beam distributes the jacking force from the beam to all parts of the column. When the structure is completed, ends of the I-beams will be burned off, but the portions within the columns will serve as part of their reinforcing.

The jacking operation itself was quite simple. One hydraulic pump and four jacks for each column were all the tools needed for the job. Vertical movement of the columns was transit measured.

Because H.R.H. did not have the necessary jacking equipment, this operation was subcontracted to Spencer, White & Prentis, Inc., of New York City. Their equipment included a hand-operated hydraulic pump made by Watson Stillman Co. of New York and 40-ton-capacity jacks. Water was used as the hydraulic fluid in the jacking system.

It took four jacks to lift a column. The jacks had 4-in. rams that delivered 8 tons of force for each 1,000 psi of pressure applied by the pump. Maximum pressure during jacking was 5,500 psi. Manifolds in the hydraulic lines equalized the pressure so that all pumps exerted the same force.

Before jacking, a transit was leveled and aimed at the column to be jacked and a mark was made on the column at the line of sight. Another mark was made ⅛ in. below the first one. The column was jacked until the lower mark was even with the line of sight of the transit.

At that point two ⅛-in.-thick shims were inserted between the column bearing plate and the girder flange. Each shim covers half the area of the column and has two semi-circular cutouts that fit around the dowels in the column.

After all five columns were jacked ⅛ in., the procedure was repeated to eliminate the ¼-in. deflection. During the entire jacking operation the columns rose approximately 3/16 in. and the girder deflected 1/16 in. This extra deflection caused the girder to act as a spring and to force the columns up an additional 1/16 in.

When jacking was completed, the fourth floor was at the correct elevation, but the eighth floor was actually ⅛ in. too high By the time the tenth floor is completed, the added load again will deflect the steel girder about 1/16 in. so that the eighth floor will be only 1/16 in. too high.

Handling the project for H.R.H. Construction Corp. is E. Ralph Ramsey, general manager. Job superintendent is Al Klinger. Chief engineer for Dreier Structural Steel Co., is Philip Dreier.

John Harold Barry is the architect for the garage, and Charles Luckman Assoc. are architects for Toots Shor Restaurant.

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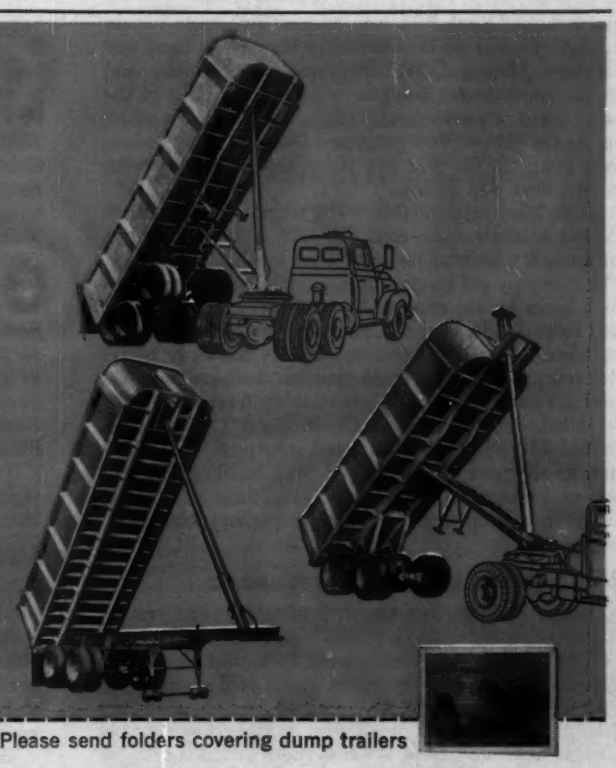

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Rieth-Riley serves Indiana's and Michigan's highway and heavy construction needs

BLAIR RIETH, President,
Rieth-Riley Const. Co., Inc. SAYS:

"I utilize CONSTRUCTION METHODS magazine to keep abreast of new developments and new products made available. Job articles are especially helpful in showing us a new or different method. Advertising is of definite value to us. All supervisory and management people can benefit from CONSTRUCTION METHODS."

THE NAME of Rieth-Riley can be seen on a wide variety of heavy construction machinery through Indiana and Southern Michigan. Site improvement, highway and airport construction, bridges . . . these are some of the major types of work done by this contractor in contributing to the growth and progress of these states for over forty years. In the past five years, this company's work totaled over $40 million.

Rieth-Riley originated in 1916 when Albert A. Rieth formed a construction company with offices in Goshen, Indiana. A year later he was joined by George A. Riley. The company got its start doing small jobs in gravel and road bases for the county. By 1919, they received their first federal-aid contract. Under the direction of the two partners, Rieth-Riley grew steadily. By the early 1950's the company was awarded the first Indiana toll road contract and had the first interstate contract in Indiana. In 1960, the Rieth-Riley Construction Company recorded $10 million of completed construction. In addition to all types of paving and road building, bridges, sewers excavations and foundations, their volume includes small contract work such as parking lots, driveways, etc.

Rieth sons help guide company to success

In 1921, Blair Rieth (son of the founder, and current president of the company) began his career in construction by working as water boy for his father. His formal education at Purdue University was in civil engineering. After graduation in 1939 he joined the company. By 1943 he rose to the presidency of the company. His brothers Lee Rieth and William Rieth joined the organization in 1942 and 1945 respectively. Today, both are also officers. Included in this top management group is R. G. Klein, Treasurer; V. W. Terhune, H. L. Bowen, J. O. Pfauf, and Maurice Blair, Carl Ingwalsen, General Superintendents; H. P. Kunkler, Supt. of Bridges; William S. Jessup, Equipt. Supt. The Sr. Mr. Rieth has passed away and Mr. Riley is retired.

Large equipment inventory handles work load

The volume of work done by Rieth-Riley Construction Company in the course of a year demands a substantial equipment inventory since they handle a considerable volume of both large and small contracts at the same time. A fleet of over 700 units of equipment of every type (valued at $3 million) is employed throughout Indiana and Southern Michigan. A significant part of this inventory is Rieth-Riley's ten asphalt producing plants . . . both portable and permanent. These are used primarily for the company's own needs . . . but some asphalt is sold to outside companies. Eleven asphalt pavers, 4 concrete pavers, 146 trucks and 48 rollers are employed in the Rieth-Riley paving operations. (see complete inventory breakdown at right)

Two-way radios are used in the automobiles of all supervisory personnel. This facilitates job expediting and effective liaison between branch offices and job sites.

$600,000 of new equipment bought in '60

Efficient equipment is the lifeblood of every contractor. Rieth-Riley maintains a rigid service and repair program with the permanent repair center at Goshen, Indiana. Storage facilities are available at all of its branches and over 100 acres are used for this purpose. A permanent staff of 20 mechanics handles field and shop repair and maintenance.

Coupled with this maintenance program is Rieth-Riley's program of purchasing new and better equipment. In 1960, the company invested $600,000 for new machinery for replacement of old equipment, and expansion of the present inventory.

Part of Rieth-Riley's fleet of paving equipment shown in action on Route 12, Hartford, Michigan.

5-ton stationary plant. One of 10 asphalt plants located in Battle Creek, Michigan.

Scraper and dozer do grading work on Rieth-Riley road project in Morgan County, Indiana. Part of company's 13 scrapers and 20 dozers.

Purchasing team buys carefully

Before such a large amount of money is spent on new equipment . . . Blair Rieth says:

"We have to consult with our job superintendents and equipment superintendents to get their suggestions for equipment to be replaced or repaired. Top management, superintendents, and key equipment operators get in on new equipment demonstrations. We consider carefully the equipment that our key people recommend and need. This enables us to decide what to buy and when to buy it."

Success formula proves profitable

Blair Rieth, president of the company, attributes part of their success to a simple formula. Capable personnel is a major factor, coupled with training and promotion from within. This helps the company to minimize turnover of personnel.

Each project is handled as a separate enterprise at Rieth-Riley. And the district offices of the company enable it to take on many more smaller contracts in the area of each office. The company also extends its operations beyond the boundaries of each district office. The smaller contracts can add to the profits and help to keep equipment producing. The company's branch offices are located in South Bend, Elkhart, and Wolcottville, Indiana and Battle Creek and Grand Rapids, Michigan.

Rieth-Riley Construction Company is one of the 3,783 contracting firms which received $1,000,000 or more in contract awards in 1960. Successful contractors and their personnel must keep abreast of what's new in construction techniques, equipment and materials. At Rieth-Riley, in addition to the president, 20 key men in the company look to the pages of *CONSTRUCTION METHODS AND EQUIPMENT* magazine for practical information of this kind. Its value to America's important contractors like Rieth-Riley is reflected in president Blair Rieth's words at the upper left.

RIETH-RILEY EQUIPMENT INVENTORY

10 asphalt plants — (Hetherington and Berner, Pioneer)
23 cranes — (Koehring, Northwest, Marion, American, Insley)
13 scrapers — (Caterpillar, Euclid, LeTourneau-Westinghouse)
11 asphalt pavers — (Cedar Rapids, Barber Greene, Blaw-Knox)

15 compressors — (Ingersoll-Rand, Gardner Denver)
7 generators — (Caterpillar, Kohler)
35 pumps — (Gorman-Rupp, Jaeger)
17 graders — (Caterpillar)

20 crawler tractors — (Caterpillar, Allis-Chalmers)
46 2-way radios — (Motorola)
10 base stations — (Motorola)
48 rollers — (Huber-Warco, Ferguson, Galion)

46 pickup trucks — (GMC, Ford, International)
100 trucks — dump, tractor
40 trailers — (Gramm, Fruehauf, Talbert, Transport)
60 mobile offices and vans

21 welders — (Hobart, Lincoln)
4 concrete pavers — (Koehring)
11 spreaders, finishers and fine graders
8 front end loaders — (Michigan, Hough)

3 concrete plants — (Butler, Heltzel)
12 asphalt distributors — (Etnyre, Littleford)
2 wheel dozers — (LeTourneau-Westinghouse, Michigan)

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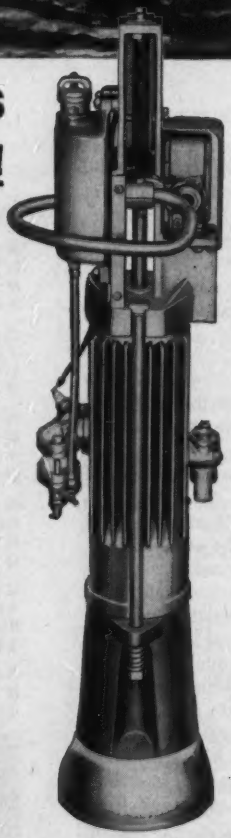

YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches.

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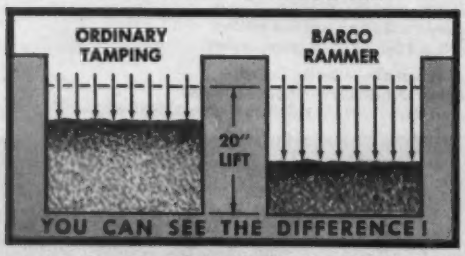

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Sales and Service

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Distributor Appointments

Allis-Chalmers Mfg. Co.: The E. F. Craven Co., Greensboro, N.C., has been named engine dealer for 19 counties in the western part of the state.

Bucyrus-Erie Co.: Two distributors have been named for crane excavators and Hydrocane lines: Tri-State Tractor Co. in Georgia, and Linder Industrial Machinery Co. in central Florida.

Ampco Metal, Inc.: Eastern Welding Equipment Co., Westbury, N.Y., is the new distributor for Ampco weldrod products in New York City and Long Island.

Onan: Cal-West Electric Inc., San Francisco, Calif., is the new distributor for Onan electric generating plants in Northern California.

Kwik-Mix Co.: Aztec Equipment Co., Phoenix, Ariz., has been named state distributor for Ka-Mo earth and rock boring tools.

Oliver Corp.: Broderick Motors has been named distributor for the Plattsburg, N.Y. area.

A. M. Byers Co.: Weakley-Watson Co., Brownwood, Tex., has been named distributor for the Houston area.

Three Point Belt Lacing, Inc.: Flexible Steel Lacing Co., Chicago, has been named a dealer for the line.

On the Sales Front

Oliver Corp.: Maurice G. Morlan has been named sales supervisor in Memphis, Tenn.

General Electric: James H. Morrison is the new sales representative for Silicone products in the Western district.

continued on page 148

Autocar "Loggers' Special" carries 8000 board feet of pine over rugged mountain roads.

Autocar Custom-Engineered Tandems move the heaviest construction equipment.

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Custom Builders to the Trucking World

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For you, Autocar produces just the truck, at a reasonable cost, that will earn the most on your investment. Buy less if you can afford it—but where every dollar counts, buy the "World's Finest."

Autocar
"World's Finest"

Division of
THE WHITE MOTOR COMPANY
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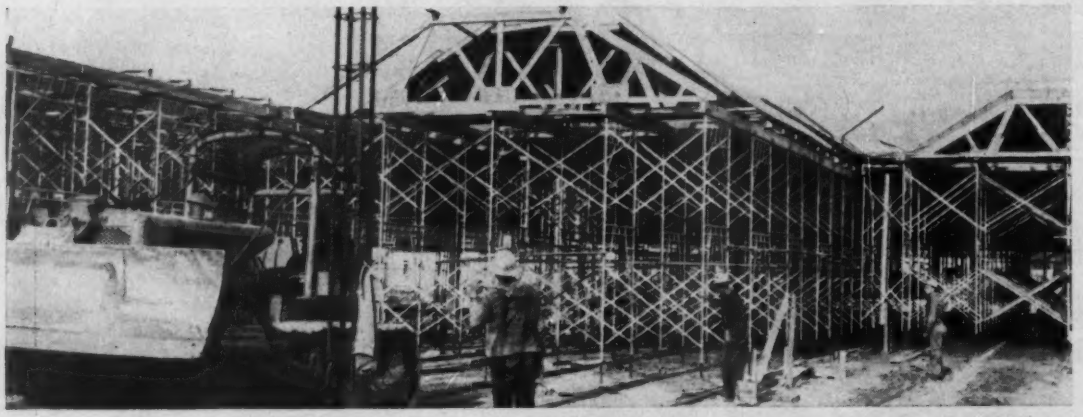
Scaffolding and Shoring Methods . . . by PSCo

Sliding shoring speeds big roof . . .

McCrory Constr. Co., contractor, uses sliding shoring to speed forming a 260,000 sq. ft., 4-in. thick, folded plate slab roof for Richland Mall Shopping Center, Columbia, S.C. 1800 frames of "Trouble Saver" (R) Shoring are used. After stripping, 24-ft. wide by 100-ft. long sections, with wood trusses in place, are slid by tractor on sills to next pour area. Usual dismantling is eliminated, except under drop beams between bays.



Few parts make forming scaffold . . .

To get working platforms for setting forms for the inner 85-ft. high, 22-ft. diameter concrete wall of a new double helix ramp parking garage in Milwaukee, Siesel Constr. Co., contractor, uses only 264 of frames "Trouble Saver" Scaffolding. As 20-ft. high wall sections are completed, new 20-ft. lifts of scaffolding are erected.

Simple protection bridge . . .

During third floor addition to Baltimore Gas & Electric Co., the company used this easily erected protection bridge for pedestrian safety. Only 32 units of light duty Canopy Frames, 34 standard 6 ft. 6 in. high frames, 12 three-foot frames and four trusses of "Trouble Saver" Scaffolding are used. Note how trusses span truck entrance for traffic flow.

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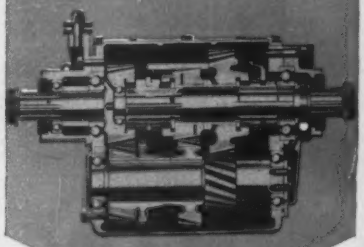

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MODEL	High	Intermediate	Low
3-A-92	.74	1.00	2.09
3-B-92	.84	1.00	1.24
3-C-92	.75	1.00	2.64
3-D-92	.75	1.00	1.24
3-E-92	.84	1.00	2.09
3-F-92	.84	1.00	2.64
3-G-92	1.00	1.327	2.09
3-H-92	1.00	1.327	2.64

For the right transmission for every operation

Specify

Specify the MODEL

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Circle 148 on Reader Service Card

SALES AND SERVICE...

continued

American Hoist & Derrick Co.: Robert L. Wicker is the new manager of distributor sales.

Allis-Chalmers Mfg. Co.: These district and area managers have been apppointed: James H. Jones in El Paso, Tex.; Raymond H. Black, Allentown, Pa.; Charles E. Dandois, Lehigh Valley; Malcolm S. Jones, Western accounts; and Clinto R. Carlisle, Hartford, Conn. L. J. Frick is new manager, industrial equipment div. sales, in the midwest region.

Springfield Greene Industries, Inc.: Thomas H. Logan, Jr., is vice president of sales for manufacturers including Cemco.

Clayton Mfg. Co.: James L. Donnelly has been named district manager in northern California and Nevada for the steam generator division.

Koehring Co.: Philip E. Cunningham has been appointed sales manager.

Rockwell-Standard Corp.: Charles C. Warne, Jr., is the new sales assistant to the vice president.

Hy-Dynamic Co.: Don Mitchell has been named sales manager.

Schield Bantam Co.: Vernon E. Pray has been appointed sales manager for the Waverly, Iowa firm.

Dorsey Trailers: Frank Mularz has been named director of regional sales in the U.S. and Canada.

American Tractor Equipment Corp.: Chester R. Cook has been named sales engineer for the Southwest area, with headquarters in Albuquerque, N.M.

Chicago Pneumatic Tool Co.: Russell B. Miller has been appointed general sales manager.

Granco Steel Products Co.: Robert L. Skaggs has been made manager of form and metal roof deck sales.

Athey Products Corp.: Joseph W. Graf has been named domestic sales manager for the Chicago, Ill., manufacturer.

Preco, Inc.: W. Bill Chapman is new national sales representative for back rippers.

Bucyrus-Erie Co.: Don W. Martin has been named manager of sales development. George D. Grayer has been appointed manager of the new Midwestern sales region with headquarters in St. Louis, Mo.

Willys Motors, Inc.: James Beattie, Jr., has been appointed vice president and general sales manager.

Alpha Portland Cement Co.: Eugene F. Stratford has been named New York district sales manager.

Sika Chemical Corp.: Paul A. Sieverling has been appointed sales manager.

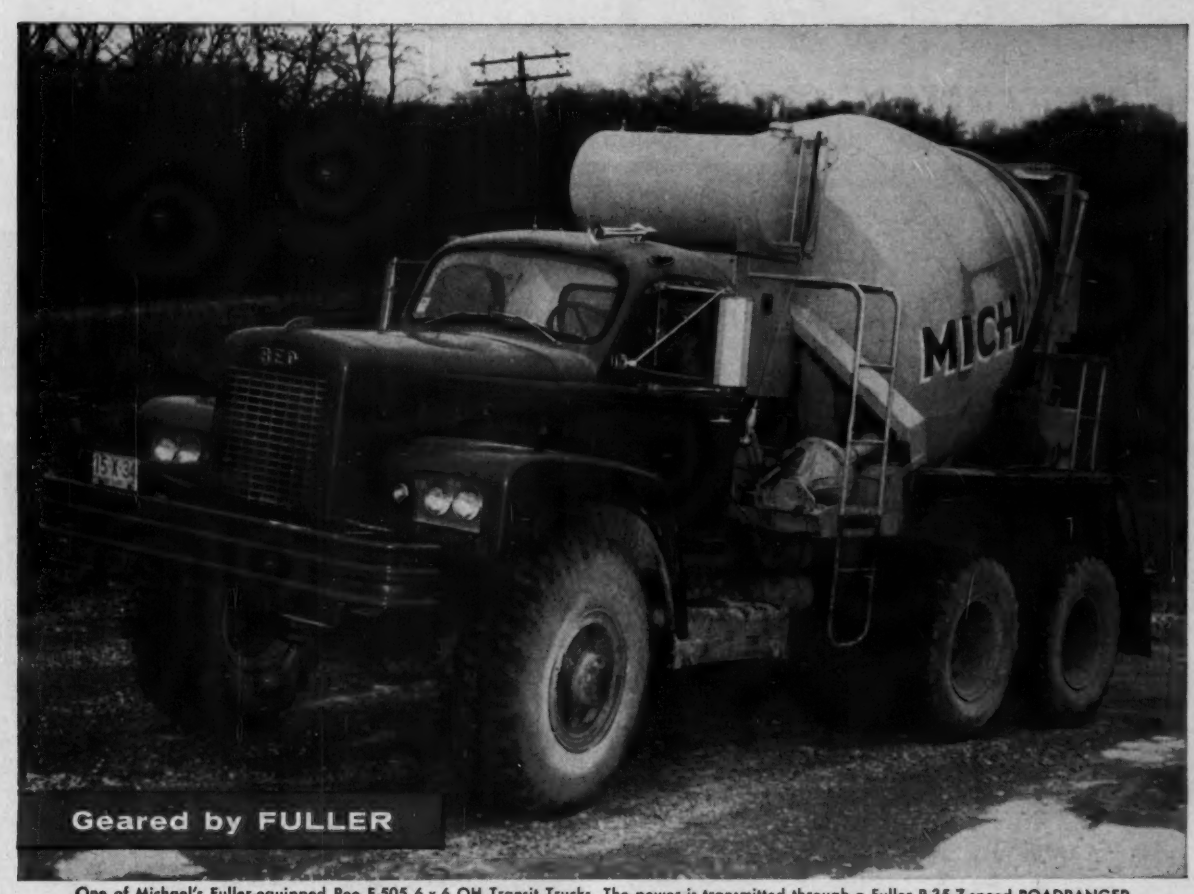
Symons Clamp & Mfg. Co.: Robert L. Bruns has been named manager of the Cleveland district; Max Doubleday has been named sales engineer in the South El Monte, Calif., office; Victor Golub has been assigned as sales engineer in the New York City territory; Richard J. Lawler has been named sales engineer in the Kearney office; Al Reesemyer has joined the Cleveland office as a sales engineer; R. K. Tramsen is a sales engineer at Pittsburgh; and Vernon Schimmel has been named western regional sales manager with headquarters in San Francisco.

Special Mention

Schwing-American Corp.: The national headquarters of this West German company has been established in Rockford, Ill. They will manufacture a line including climbing cranes, hydraulic concrete pumps, and pneumatic concrete placers. Sales representatives and leaderships are presently being established throughout the U. S.

Joseph T. Ryerson & Son, Inc.: The company will provide service on prestressed or reinforced concrete lift-slab construction through its construction materials division. The Youtz-Slick method of erection is used.

Construction Fasteners, Inc.: A warehouse and distribution center has been opened in Houston, Tex.



One of Michael's Fuller-equipped Reo F-505 6 x 6 OH Transit Trucks. The power is transmitted through a Fuller R-35 7-speed ROADRANGER to a 2.55:1/1.00:1 transfer case and 7.59:1 front and 7.54:1 rear axles.

R-35 ROADRANGERS from Pit to Patio

"We have more than doubled our business in the last three years," Vern Michael, owner of Michael Concrete Products, Inc., Loveland, Ohio, says. "Since we bought our first big Fuller-equipped Reo in 1957, our trucks always come through on deliveries. That Fuller R-35 ROADRANGER Transmission should be given a major portion of the credit for this performance. It has the get-up-and-go we need to get thru the rough construction sites where we operate."

Fuller R-35 RoadRanger features:

- No gear splitting — 7 selective and progressive gear ratios
- Easier, quicker shifts — closely spaced and equal ratios in the operating range
- One shift lever controls all 7 forward and 1 reverse speeds
- Engines work in peak hp range with greater fuel economy
- Compact transmission—only 375 lbs., 26-25/32 inches in length

RATIOS

Gear	Std.*	Opt.**	% Step
Seventh	1.00	1.00	*33 24**
Sixth	1.33	1.24	34.8
Fifth	1.79	1.67	34.8
Fourth	2.42	2.25	36.5
Third	3.30	3.06	48.6
Second	4.90	4.55	67.3
First	8.20	7.62	
Reverse	7.63	7.09	

Weight . . . . 375 lbs.
Oil Capacity . 16 pts.

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN

Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

Circle 149 on Reader Service Card

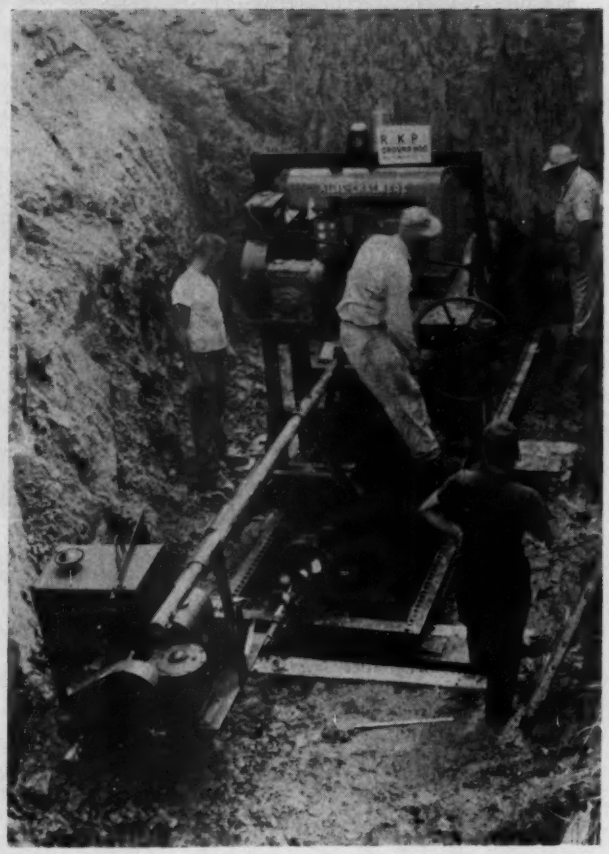
Construction Equipment News

For more information on any item, circle the key number, found at the end of each item, on the READER SERVICE CARD just inside the back cover.

Rotating Casing Eliminates Jacks

A revolving casing fitted with a cutting edge eliminates the need for a jacking system on the R.K.P. Groundhog, a new horizontal boring machine. An auger extracts spoil through the casing by revolving in the opposite direction. The casing is rotated by a drive unit mounted on rails. It is pushed forward by a hand-controlled crowding assembly. Rails are installed to meet pipe size. Casings and cutter heads are available in eight sizes, 12 to 36-in. dia. Cutter heads, of ½-in. steel plate, have teeth set at an angle to feed spoil into the casing. A 9-in. auger is used with all casing sizes.—The Punchy Co., Dubuque, Iowa.

Circle 301 *on Reader Service Card*



Digger Has Hydraulic Kelly

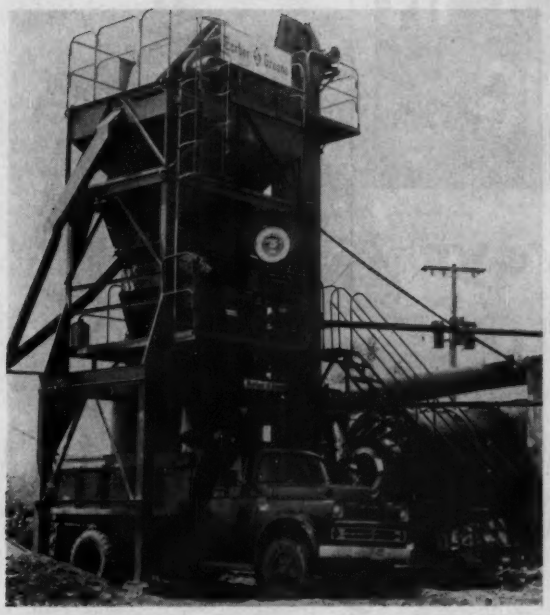
The HFMS boring machine will swing an auger 45 deg laterally for anchor holes and 25 deg under the vehicle. Augers from 9 to 96 in. can penetrate up to 30 ft. A hydraulic Kelly provides variable speeds in feed and retraction with down pressure up to 20,000 lb. The derrick is three-stage. The hydraulic feed ram, encased in the 4½-in.-sq Kelly bar, is enclosed at the auger end, so that the only hydraulic seal required is on the top actuating ram. An enclosed gear collar rotates the Kelly bar. The digger can be mounted on a swing base.—Highway Trailer Industries, Stoughton, Wis.

Circle 302 *on Reader Service Card*

Tractors Feature Four-Wheel Steer

In this new four-wheel-drive tractor line, the operator can steer front and rear wheels independently for a variety of steering applications. The tractors are in two models: the 175-hp I-100, in photo, and the 123-hp I-90. Standard are torque converters and powershift transmissions.—M-R-S Mfg. Co., Flora, Miss.

Circle 303 *on Reader Service Card*



Batch Tower Comes in Sections

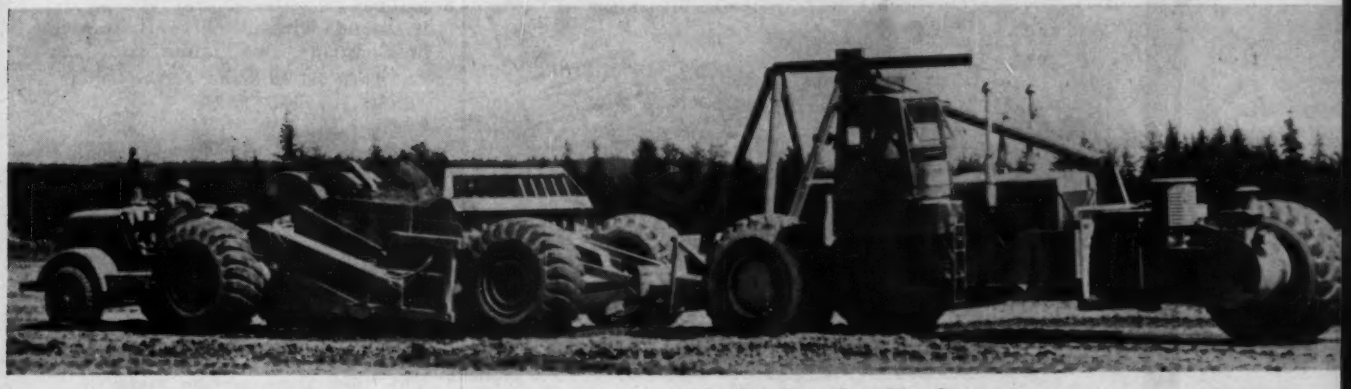
Barber-Greene's 2,000-lb asphalt batch tower is sectionally designed for easier moving and erection. Model A-8 for use with Model DA-50 dryer, has a 3½-deck vibrating screen, four bins that will store 11 tons. Wet and dry-cycle timers provide automatic control of mixing cycles for intervals up to 150 sec. Barber-Greene Co., Aurora, Ill.

Circle 304 *on Reader Service Card*

Conveyor Eliminates Spoil Dozing

A new backfill conveyor attaches to trench excavating machines and replaces spoil 50 ft behind the digger, eliminating spoil piles on lawns and backfilling with a dozer. Spoil is cast into a hopper over the conveyor and moved on a belt, 36 or 42 in. wide. The unit is mounted on a 34-ft wide axle that straddles trench.—Kolman Mfg Co., Sioux Falls, S.D.

Circle 305 *on Reader Service Card*



Big Pusher for Big Scrapers

The Pacemaker is an 840-hp tractor on rubber tires intended to replace tandem pushers for loading big capacity scrapers such as the 36-yd machine above. Two diesel-electric generating plants supply power for three electric wheels, each with its own dc motor and gearing. The unit develops over 90,000 lb of drawbar pull.—R. G. LeTourneau, Longview, Tex.

Circle 306 *on Reader Service Card*

SAFWAY® announces . . .

NEW CONCEPT IN POST SHORING

You profit 4 ways with SAFLOAD®

(Patent Pending)

■ **25% more safe load capacity** than a brand new 4 x 4 Douglas fir timber.

■ **Lower cost:** Comparisons prove SAFLOAD supports up to 50% more construction per unit of cost than other steel shores presently in use. Greater capacity means fewer shores, lower cost per job.

■ **Faster set-up, easier stripping:** Convenient adjustment height provides better leverage. New "handgrip" pin-ring slips in and out easily, without special tools.

■ **No exposed threads, less maintenance:** Exclusive sleeve protects micro-adjustment screw threads, keeps out foreign matter, prevents "freeze-up". Heavy-duty adjusting handle and base section withstand repeated pounding and abuse.

ONE SIZE

- Easily adjusted from 7½' to 13' for greater job flexibility
- Weighs only 66 lbs.
- Available for immediate shipment

WRITE FOR BULLETIN 199A

SWP-2

SAFWAY STEEL PRODUCTS, INC., 6228 W. STATE STREET, MILWAUKEE 13, WIS.

ESTIMATING AND ENGINEERING SERVICE

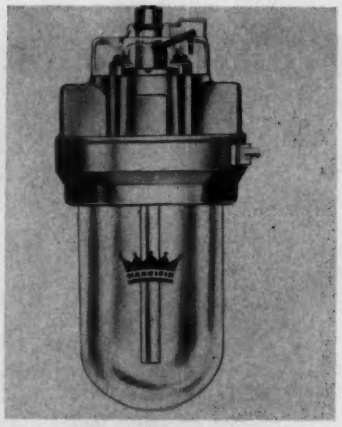
SAFWAY®

Sales and rental outlets in principal cities

Circle 152 on Reader Service Card

EQUIPMENT NEWS . . .

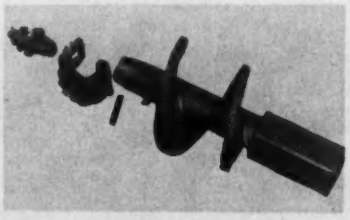
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Air Line Lubricator Has Sight Dome

This new compressed air line lubricator has a transparent dome that allows the operator to see the changing oil delivery rate as it is manually adjusted. Offered in ¼, ⅜, ½, ¾ and 1-in. pipe sizes for service to 150 psi, the Hannifin Sight Feed lubricator provides accurate oil delivery in applications that move only 2 cu ft of air per min. The sight feed feature allows oil rates from no-flow to a steady stream. Inlet and outflow ports are interchangeable for easy installation. The bowl can be filled through the top without interruption in the airflow, and can be removed and replaced in seconds without tools.—Hannifin Company, Des Plaines, Ill.

Circle 307 *on Reader Service Card*



Auger Has Three Parts

This new three-section auger is designed for use where holes must be bored in varied terrain. Available in 8, 10 and 12-in.-dia sizes, the Poster-Bore has penetrator points and teeth that are added and detached with a single pin.—Trainer Associates, Inc., New Castle, Del.

Circle 308 *on Reader Service Card*

Want better scraper versatility?

the TS-14 all-wheel drive "Euc" is the answer!

Whatever your scraper requirements may be, the Euclid TS-14 can cut earthmoving costs on a wide range of work—from small yardage jobs to the biggest projects.

All-wheel drive and 14 yd. struck capacity puts this "Euc" way ahead of other medium size scrapers in performance and overall work-ability. With a total of 296 h.p. and separate Torqmatic Drive for each axle, the TS-14 picks up heaped loads in a hurry... gets out of the borrow pit or cut fast... and really rolls on the haul road. It loads itself in practically any material... and with a push tractor it's a big producer on the toughest scraper job.

Here's a one-man earthmover that reduces your equipment investment... works more days per year... handles a wider range of work because it isn't stalled by steep grades or adverse conditions. Ask your dealer for complete information... better yet, have him show you a TS-14 in operation.

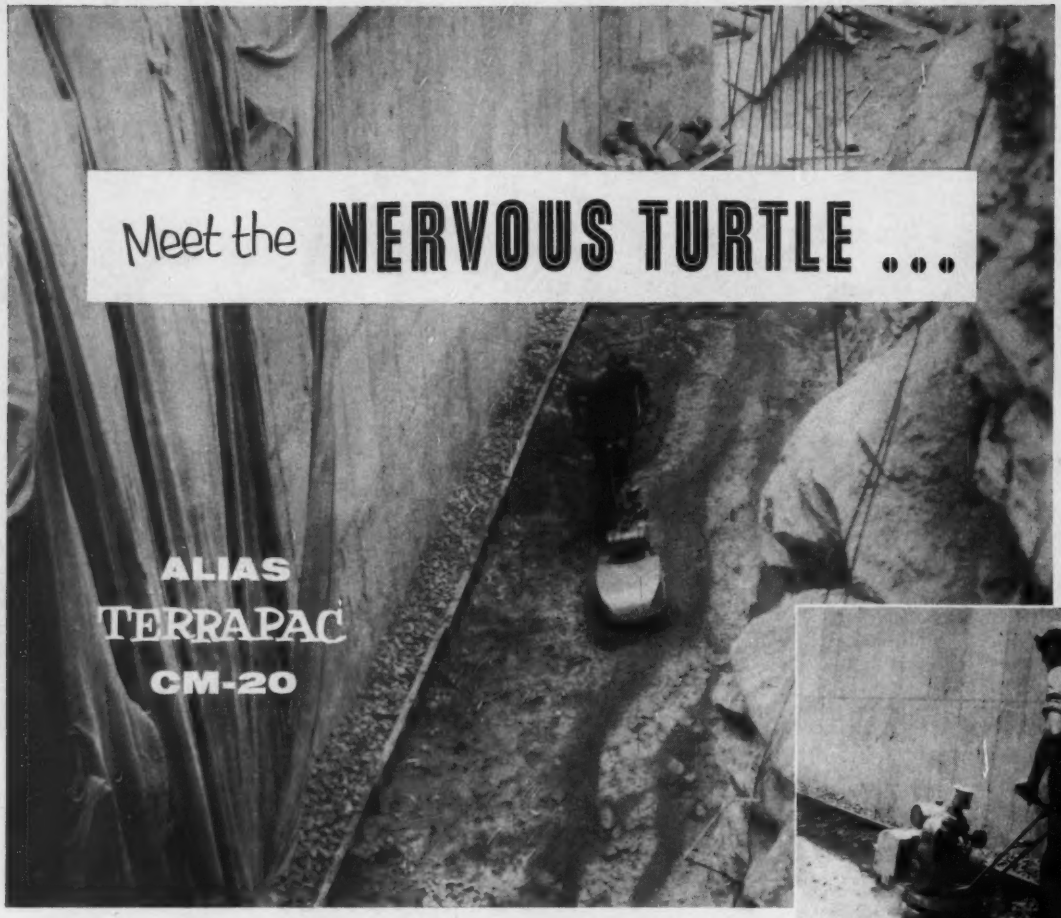
EUCLID **Division of General Motors, Cleveland 17, Ohio**

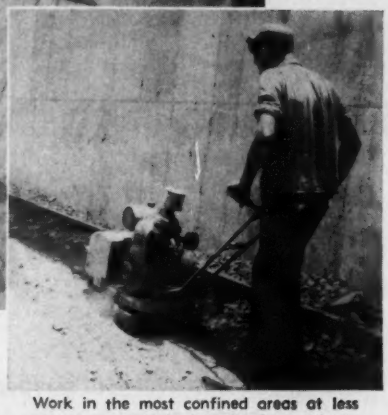
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE





Work in the most confined areas at less cost than old-fashioned tamping methods.

the Latest Development in
VIBRATORY SOIL COMPACTORS

Down South they wouldn't know what a CM-20 is, but ask about the Nervous Turtle and you get an earful . . . It's the only heavy-duty, one-man operated compactor on the market - develops a 6,600 lb. compaction wallop at speeds up to 75 feet a minute . . . Handles not only granular materials but many clay mixtures as well . . . Maneuvers close to abutments, retaining walls and piling; ideal for backfill jobs and shoulder work, railroad embankments, floors and foundations . . . The CM-20 penetrates up to 30 inches or more - in one or two passes, while its smaller version, the CM-15, will compact lifts up to 12 inches . . . Ask your local Terrapac distributor to demonstrate the model that is best suited to meet all of your varied job requirements. Call him today - you'll be ahead. 41-78

NO COMPARABLE MACHINES ON THE MARKET TODAY!

VIBRO-PLUS VB TERRAPAC

VIBRO-PLUS PRODUCTS, Inc.
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

Circle 153 on Reader Service Card

Circle 154 on Reader Service Card

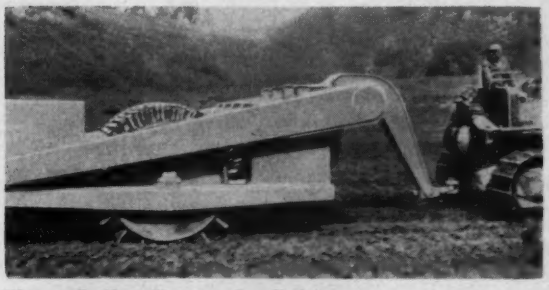
EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Improved Loader Has Four-Wheel Drive

The MK II, an improved version of Merton's 454 four-wheel-drive loader has several new features. Crowd angle is now 40 deg on the six-ton unit. The loader features new buckets of 1 and 2¼-cu-yd capacities, power steering and 360-deg operator vision. The operator can control the height of discharge at both front and rear.—Merton Engineering Co., Ltd., Feltham, Middlesex, England.

Circle 309 on Reader Service Card



Three Roller Types Available For Versatile Box Roller

Pneumatic tires, sheepsfoot drums or plain steel drums can be used interchangeably on Southwest's MB-75, a multiple box roller. Designed for use with Caterpillar tractor models 630-A and 631-A, the unit has a rated capacity of 50 to 100 tons. The pneumatic-tired unit MB-75-P has 80-psi tube tires. The sheepsfoot roller, MB-75-S has four independent oscillating drums with forged steel wedge feet. Model MB-75-D has four oscillating plain steel drums. Detachable draft beams are optional for all models. The pneumatic unit is available with 150 psi tires. Rolling widths vary from 11 ft to 11 ft 9 in. Southwest's STT-100 sprinkler tank has also been redesigned for use with the Cat tractors, as has the ST-80. These have 10,000-gal and 8,000-gal capacities.—Yuba Consolidated Industries, Inc., San Francisco, Calif.

Circle 310 on Reader Service Card

2400 pounds more payload

with ready-mix rigs made of Kaiser Aluminum

"Owning steel mixers is like reading yesterday's newspaper," says president Albert LaPierre of North Star Sand & Gravel Company, Seattle. By saving 2400 pounds of mixer weight, North Star's aluminum rigs boost load capacity from 5½ to 7 yards. This extra 1½ yards earns extra profits (almost *double* profits on the average driveway pour—because 6½ to 7 yards required can be delivered in one trip instead of two!). North Star's Aluminum Transcrete Mixers were manufactured by Construction Machinery Co. of Waterloo, Iowa. "We've never as yet bought a new piece of equipment that has been as trouble-free," says LaPierre. MEMBER ATA AMERICAN TRUCKING INDUSTRY

KAISER ALUMINUM

New Leadership In The World Of Aluminum

And... Payload Pete points to still more profits! Please turn page...

Circle 155 on Reader Service Card

An INSLEY gives the best SERVICE

Take this Insley K backhoe, for example. The modern, wide-vision cab lets the operator see his load at all times for better efficiency and safety. Dependable, easy operating mechanical controls and clutches are ready for work in any kind of weather. Conservatively rated, heavy-duty parts stand up under the toughest conditions for a much longer service life. These are just a few of the Insley "best service" features. Get the full story from your Insley dealer today.

...gets the best service, too!

The Insley service network includes over 100 dealer locations throughout the U. S. and Canada. Each dealer has trained servicemen and is well stocked with genuine Insley parts . . . ready to handle virtually any service problem on an around-the-clock basis. Consider the importance of service and parts when you buy a new machine, and you'll buy an Insley every time.

THERE'S AN **INSLEY** WORKING NEAR YOU

INSLEY MANUFACTURING CORPORATION
P. O. Box 167 · Indianapolis 6, Indiana

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Stationary Air-Cooled Compressor For High Pressure Drilling

A new series of self-contained air-cooled stationary compressors delivers from 200 to 600 cfm of air at 250 psi. The self-contained units are in two basic models, with three and six cylinders. The three-cylinder unit delivers 200 to 275 cfm through a single high compression head from a power takeoff or separate engine drive. The six cylinder model provides 400 to 600 cfm, depending on rpm selected. Le Roi Div., Westinghouse Air Brake Co., Sidney, Ohio.

Circle 311 *on Reader Service Card*

Diamond Drilling Bits Thrown Away After Use

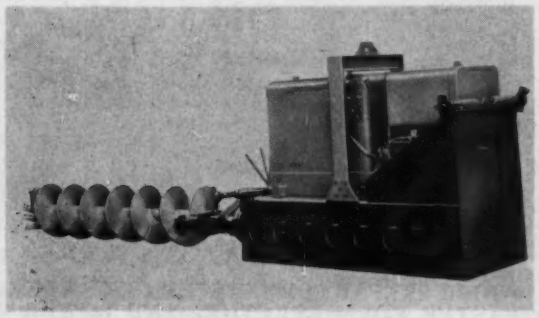
A throw-away core bit made with diamonds has been added to Clipper's line. The new bit, which will cut through steel-reinforced concrete, has diamonds set in a non-spiral, random manner. Core barrels have been designed for added strength. The bit is for contractors who do small drilling jobs.—Clipper Mfg. Co., Kansas City, Mo.

Circle 312 *on Reader Service Card*

Plastic Accessories Eliminate Rust

Plastic accessories are intended to replace steel slab bolsters and concrete blocks in reinforced concrete, eliminating bleeding through of rust. Made of polyethylene, the accessories are said to be resistant to chemicals and temperature extremes. The three accessories are continuous slab and beam bolsters, mesh bolsters that snap into place and plastic donuts for holding exact clearance between reinforcing bars and form faces.—W. R. Grace & Co., Polymer Chemicals Div., Clifton, N.J.

Circle 313 *on Reader Service Card*



Heavy Duty Boring Machine Drills 5-ft-dia Holes

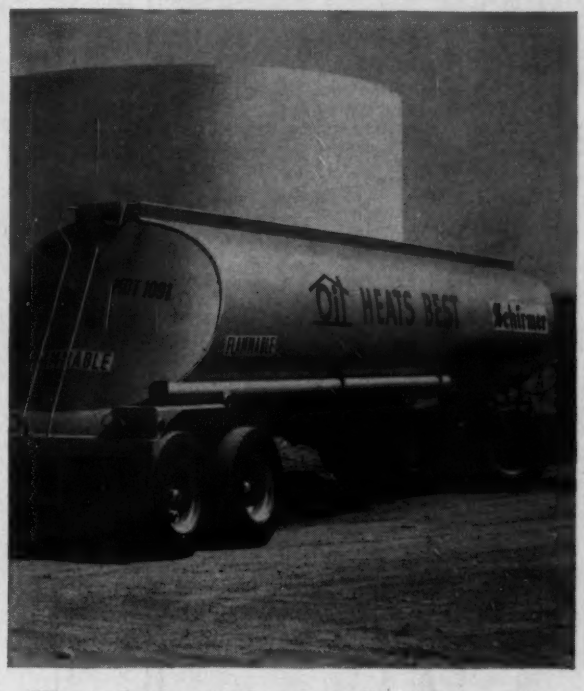
Horizontal or inclined holes from 6 to 60-in.-dia can be drilled with Calweld's new line of boring machines. The unit has hydraulic rams actuated by a 50-gpm pump to produce up to 300 tons of thrust. This will drive steel casings while the machine digs, or jack concrete pipe with the drill removed. A 120-hp engine with four-speed transmission produces 15,000 to 19,000 ft-lb of torque. Calweld, Inc., Los Angeles.

Circle 314 *on Reader Service Card*

◀ *Circle* 156 *on Reader Service Card*

1,200 gallons more payload

with tank trailer made of Kaiser Aluminum



"We get a 6 per cent to 12 per cent gallonage increase over comparable steel units," reports Mr. Lloyd Schirmer, President of the Schirmer Transportation Co. Clean, non-sparking aluminum also gives this tanker extra strength, reduces maintenance cost and simplifies cleaning. The model shown here, made by the Independent Metals Division, Fruehauf Trailer Company, Detroit, more than earns its keep for Schirmer Transportation Company, St. Paul.

MEMBER ATA AMERICAN TRUCKING INDUSTRY

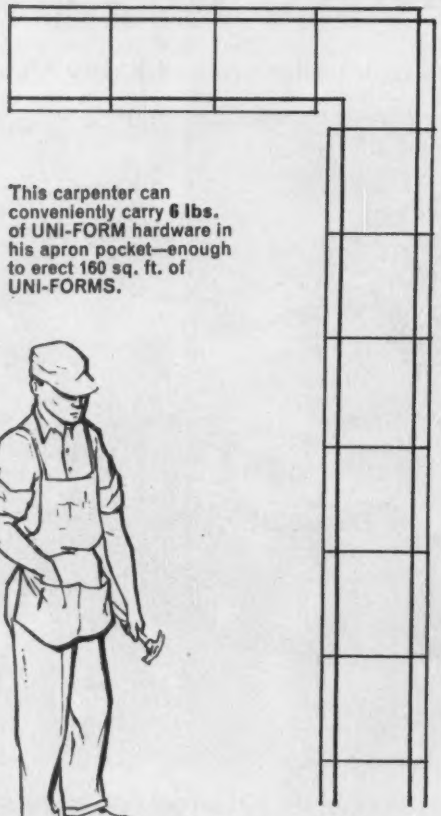
KAISER ALUMINUM

New Leadership In The World Of Aluminum

And... Payload Pete points to still more profits! Please turn page...

Circle 157 *on Reader Service Card*

WHICH PREFAB FORM SYSTEM OFFERS MORE PRODUCTIVE FORMING TIME PER DAY?



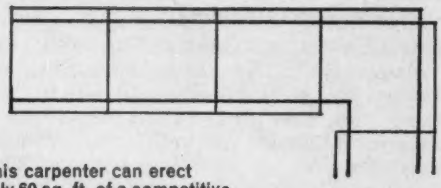
This carpenter can conveniently carry **6 lbs.** of UNI-FORM hardware in his apron pocket—enough to erect 160 sq. ft. of UNI-FORMS.

UNI-FORM SYSTEM

Carpenters can form more contact area per hour with UNI-FORM Panels than they can with any other prefab form system. The reason? It takes less hardware—in most cases, 50% less—to form a given contact area. And UNI-FORM hardware **weighs less, costs less,** and is easier to install.

EXAMPLE: **6 lbs. of UNI-FORM hardware—128 Tie Keys—are required to install 32 UNI-FORM Ties (4 keys per tie).** 32 Ties are required to erect 160 sq. ft. of UNI-FORM Panels.

Cost of hardware required to install 1 UNI-FORM Tie: **LESS THAN 4¢.**
(Tie Keys are re-usable)



This carpenter can erect only 60 sq. ft. of a competitive prefab system's panels with the **6 lbs.** of hardware he carries in his apron. **Extra trips for hardware means less productive forming time.**

COMPETITIVE PREFAB FORM

A leading competitive prefab form system requires 2 tightening wedges and 2 connecting bolts per tie installed. **In 6 lbs. of this hardware, there are only 24 sets of wedges and bolts—enough for 12 ties.** 12 ties will assemble **only 60 sq. ft.** of this system's panels.

Cost of hardware required to install 1 competitive tie: **36¢.**
(Wedges and Bolts are re-usable)

WHICH PREFAB FORM SYSTEM GIVES YOU FASTER FORM ERECTION AND LOWER COSTS? Want more information about UNI-FORM Panels and the advantages they can bring to your concrete forming? Write today for complete details.

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE · CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

Circle 158 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Hydraulic Backhoe Attaches Quickly

A new hydraulic backhoe with a 12-ft 6-in. digging depth can be attached in 30 sec. The backhoe fits Caterpillar 922 and 944 wheel loaders as well as the 933 Traxcavator. The Ottawa LX is connected by pushing one lever to engage two cone mounting pins and latching release. Coupling the hydraulic lines completes the job. The unit also has a dump height of 8 ft 6 in., and can swing 190 deg left or right. Cushioning ports prevent slamming the boom at the limits of the swing. The LX can exert 7,000 lb of force at the bucket cutting edge. Hydraulic outriggers level the unit 10 deg. Two levers control all operating movements. Other buckets are available with 14 to 36-in. widths.—Equipment Div., Young Spring & Wire Corp., Bowling Green, Ohio.

Circle 315 *on Reader Service Card*

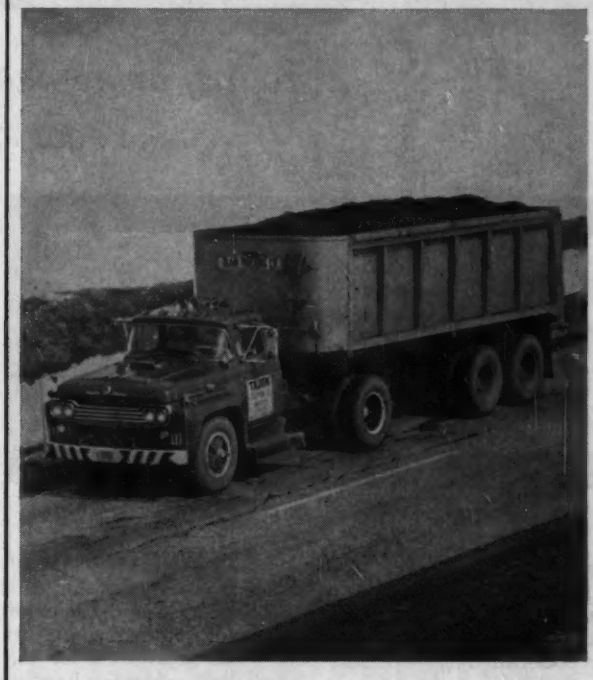
Lift Trucks Feature Larger Engines, Power Steering

Seven redesigned lift trucks with capacities from 6,000 to 10,000 lb have six-cyinder, 77-hp gasoline engines. Also featured are power steering as standard equipment, and new masts, forks, and carriages. The F series have masts made of steel sections welded together. Piston-type lift cylinders with self-adjusting inner seals and load rollers provide easier lifting. Forks, of heat-treated alloy steel, have a longer taper and rounded ends for getting under loads. Standard transmissions give two forward and two reverse speeds. Torque converters are optional.—Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Circle 316 *on Reader Service Card*

2200 pounds more payload

with dump trailer made of Kaiser Aluminum



"We obtain $7 to $10 increased profit per day thanks to aluminum's payload bonus," says enthusiastic John Chutz, president of The Tajon Trucking Company, coal haulers of Mercer, Pennsylvania. Tajon operates a fleet of the all-aluminum dump trailers manufactured by the Penn Body Division of the Hockensmith Corporation. Because both body and chassis are made of aluminum, each unit weighs in at only 8300 pounds as opposed to 10,500 pounds for an equivalent steel unit.

MEMBER ATA TRANSPORTATION AMERICAN TRUCKING INDUSTRY

KAISER ALUMINUM

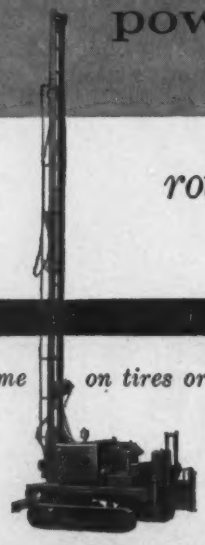
New Leadership In The World Of Aluminum

And... Payload Pete points to still more profits! Please turn page...

Circle 159 *on Reader Service Card*

LE ROI LRD-2 for low cost, powerful rotary drilling

rotary or down-the-hole drilling
. . . gas or diesel



These rigs come on tires or tracks!

Here's a highly portable blasthole drill for drilling holes up to 4½ inches as deep as 30 feet . . . equipped for either positive-drive rotary drilling or powerful down-the-hole percussive drilling.

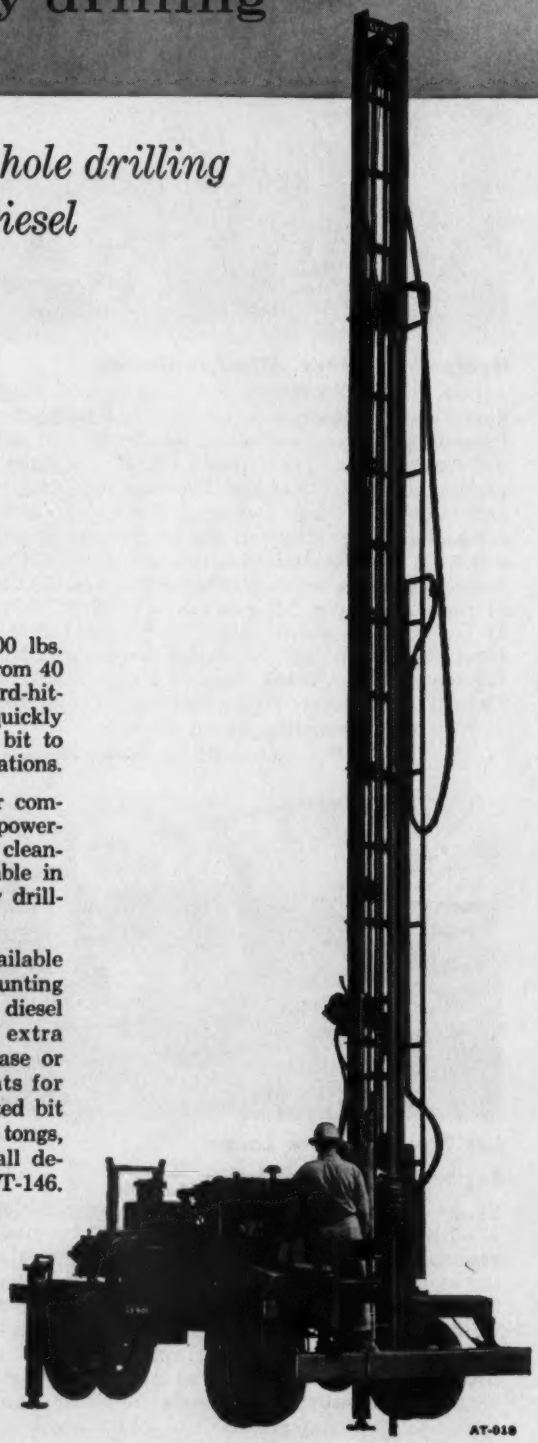
What's more, the LRD-2 is completely self-contained . . . and economically priced, too!

The entire unit is easily handled by one man. Controls are conveniently grouped at an operator's station located alongside the drilling area. The unit can be moved, leveling jacks hydraulically set, mast hydraulically raised, drill pipe and bits connected, and hole started all with a few non-fatiguing motions.

Powerful direct mechanical drive keeps the rotary table turning — won't bog down or lose torque under rough going like air or hydraulic driven units — eats through tough rock formations under 10,000 lbs. pulldown pressure at speeds from 40 to 250 rpm. If necessary, a hard-hitting down-the-hole drill can quickly be substituted for the rotary bit to drill extremely hard rock formations.

A Le Roi 25 hp two-stage air compressor provides ample air for powering the down-the-hole drill and cleaning out hole . . . or is available in single-stage where only rotary drilling is necessary.

The self-propelled LRD-2 is available either on crawler or tire mounting and with either gasoline or diesel power unit. A whole list of extra equipment is available to ease or speed drilling, including lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, . . . all detailed in Specification Sheet AT-146. Write for your copy.



AT-018

LE ROI

division of Westinghouse Air Brake Co.

Sidney, Ohio

Circle 160 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Diesel Engines Added To Industrial Tractor Line

Two series of Massey-Ferguson's industrial tractors can now be powered by a 152-cu-in., three-cylinder diesel engine with 40 hp. The 203 and 205 series use less than 1½ gal of diesel fuel an hour in operation. At a governed maximum speed of 2,000 rpm the engine can absorb loads down to 1,300 rpm before a lower gear is needed. The 205 is equipped with instant reverse and torque converter.—Massey-Ferguson, Inc., Wichita, Kansas.

Circle 317 on Reader Service Card

Controlled Fracture Lines With Portable Track Saw

Controlled fracture lines in sidewalks, curbs, and driveways are possible with a new portable track saw. Hand-tooling is eliminated with the unit. It consists of a masonry saw mounted on a welded steel frame equipped with rubber-tired wheels. Power is supplied by either a 1½-hp, 115-v motor or a 2-hp, 230-v unit.—Engineering Equipment Co., Waterloo, Iowa.

Circle 318 on Reader Service Card

Sir Payload Pete Offers You This New Booklet:

"NEW ROADS TO GREATER PROFITS"

Send Coupon For Your Free Copy! "New Roads To Greater Profits" is now ready to show you how to increase earning power with aluminum! Twenty pages of profitable facts, figures and application ideas . . . the profit story for aluminum in highway vans, concrete mixers, enclosed truck bodies—and in dump, tank and livestock trailers! This technical data will help you decide how aluminum can best serve *your* needs. (Aluminum is *not* presented here as a "cure-all." But it *is* recommended for the proved applications where its unique properties can produce profitable payload for you!)

Get a copy of "New Roads To Greater Profits" and read all the facts yourself.

Kaiser Aluminum & Chemical Sales, Inc. Room 848
300 Lakeside Drive
Oakland 12, California

KAISER ALUMINUM
New Leadership In The World of Aluminum

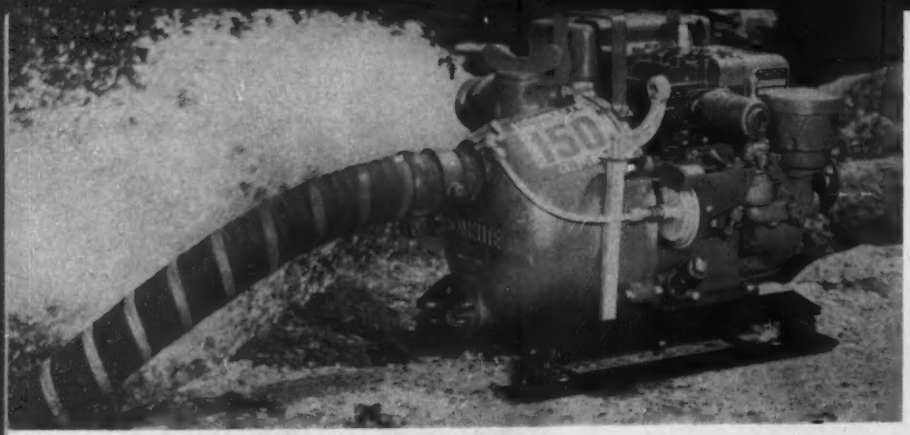
☐ Please send me your free trucking booklet.
☐ Please have representative call. ☐ Phone

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Circle 161 on Reader Service Card



Pump Accessory Reduces Costs

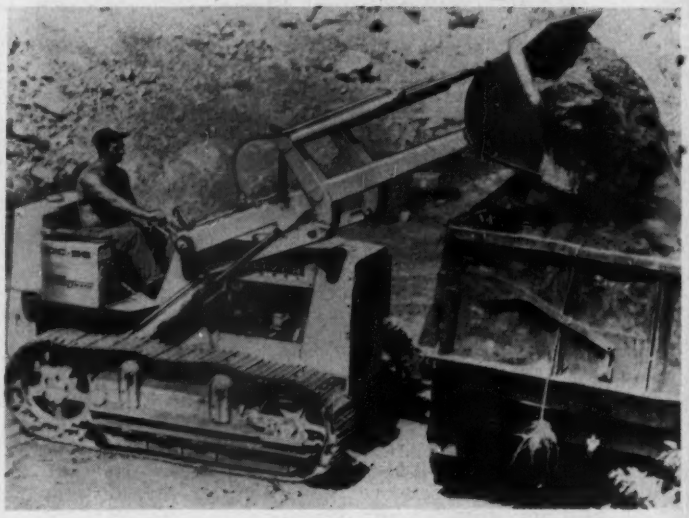
Homelite's new portable pump attachment cuts maintenance and fuel costs by automatically idling the pump engine when water drops below the suction line strainer. The engine returns to full speed when the water level rises. The accessory is available for 2 and 4-cycle engine-driven centrifugal pumps.—Homelite, Port Chester, N.Y.

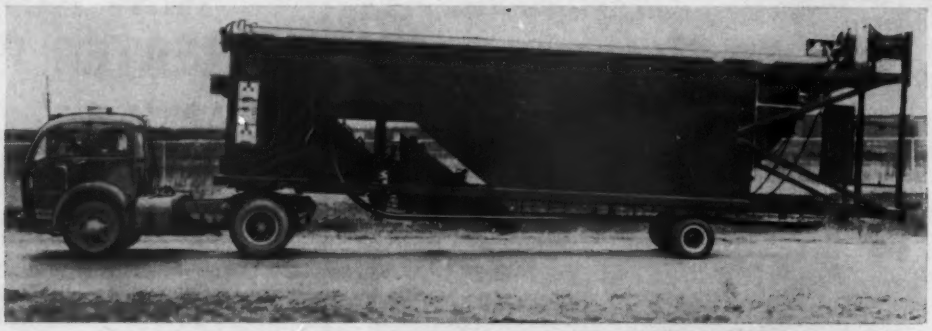
Circle 319 *on Reader Service Card*

Oliver Improves Tractor, Loader

This four-speed OC-9 crawler tractor and companion OC-96 loader have several design improvements. The tractor has vibration absorbing mountings for the radiator, new brake linings and a transmission snorkel tube design for steep slope work. The loader arm mounting frame is built into the tractor.—Oliver Corp., Chicago, Ill.

Circle 320 *on Reader Service Card*





Silo Has Own Running Gear

A new mobile cement batching and storage silo is mounted on its own highway running gear. The 425-bbl TPCS has axle, wheels, tires, brakes, stop lights and 5th wheel connection, and is sized to meet usual highway regulations.—Erie Strayer, Erie, Pa.

Circle 321 *on Reader Service Card*

Pusher-Dozer is Maneuverable

Maneuverability is accomplished in the 61-ton Payloader by articulated steering, hydraulically operated. The D-500 has a turning radius less than its length. It is powered by a 700 hp V-12 engine reduced to 600 hp at 2100 rpm.—Frank G. Hough, Libertyville, Ill.

Circle 322 *on Reader Service Card*

ACCURATE · PRODUCTIVE · EFFICIENT and TOUGH

In digging like this no other excavator compares in productivity with a modern wheel-type trencher. Take a second look at that spoil bank. That's hard shale and rock-digging, right down to trench bottom. Piling up that spoil at a 4-foot-a-minute clip is a tough Cleveland J-40.

There are fundamental reasons why full-crawler, wheel-type trenchers like this—the trencher originated and perfected by Cleveland—are unequalled for trench production in hard digging.

The wheel is the strongest type of digging element and the stability of the full-crawler mounting permits maximum exploitation of its digging ability in continuous digging action. Simultaneous wheel rotation and crawler progress result in constant forward crowd of the wheel into the work with maximum utilization of power at the point of digging.

Higher wheel-speeds in relation to crawler-travel produce a fast-biting milling action that is most effective for digging shale, frost and similar conditions. Slower wheel-speeds produce powerful bites that forcefully chew out caliche, hardpan, coral and other hard formations. The continuous-digging, crawler-mounted, wheel-type trencher digs trench in all such conditions faster and more economically than excavators dependent on interrupted-cycle digging action.

Investigate now the profit potential of a modern trencher—a tough, fast, dependable Cleveland Trencher.

CLEVELAND TRENCHER

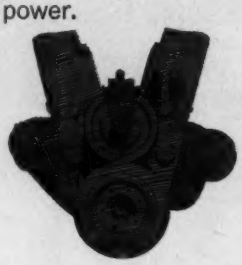
THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

Circle 163 on Reader Service Card

MOVE MORE EARTH AT LESS COST

Specify Cummins . . . the most productive diesels in the industry

Cummins construction diesels deliver the power that digs in, day in and day out. 44 models are available from 70 to 700 horsepower. They provide faster work cycles, lower operating costs, and require less maintenance than ordinary off-highway power.



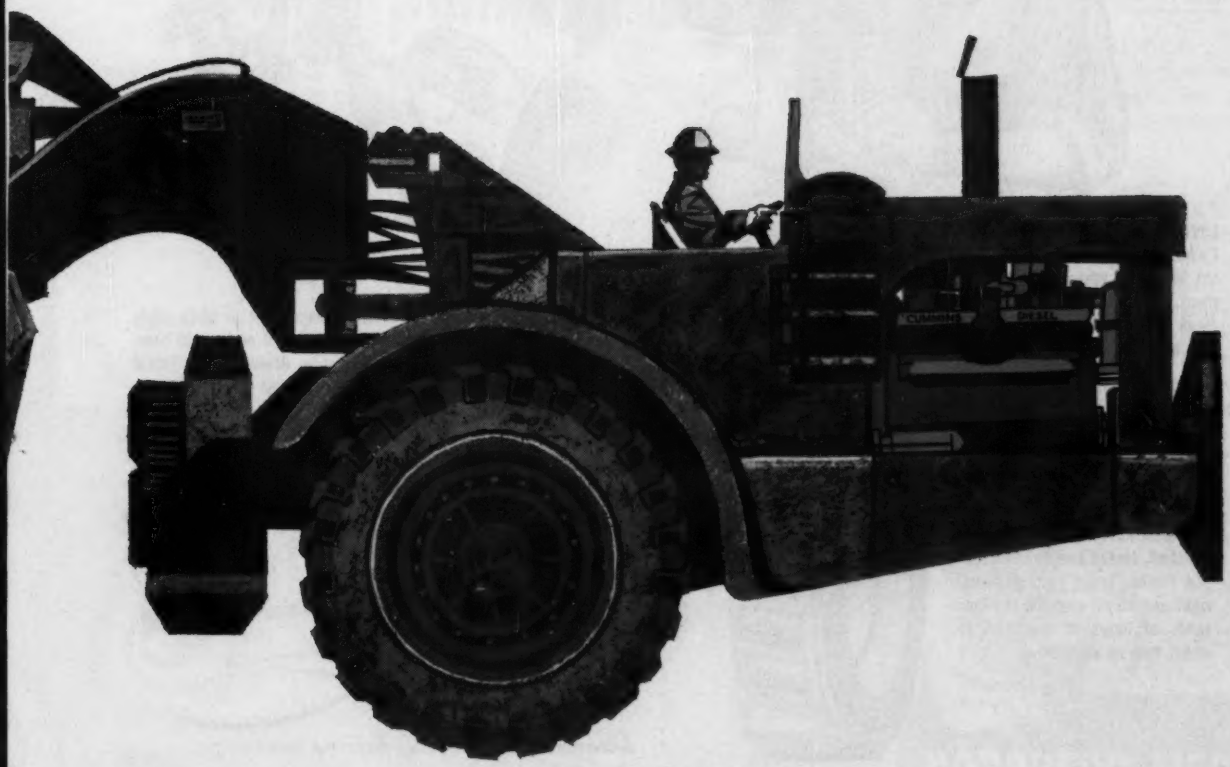
When it comes to big power, Cummins V Diesels stand alone. They are the only diesels delivering up to 700 horsepower in mobile equipment. With them, you finish more work at less

cost, with fewer machines. As a Cummins owner you have access to the most expert service in the construction industry. Service, on the job, or in the shop, is handled efficiently and economically by Cummins factory-trained specialists.

CUMMINS

Cummins Diesels are available in over 550 models of construction equipment. Contact your dealer or Cummins distributor for more details. **Cummins Engine Company, Inc., Columbus, Ind.**

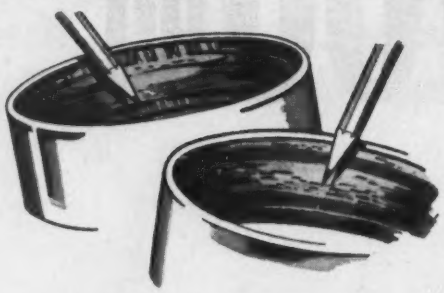
UP TO 700hp



Circle 165 on Reader Service Card

DISTRIBUTOR DAN, the SKF bearing man, shows

HOW TO PROTECT YOUR BEARINGS IN THE FIELD



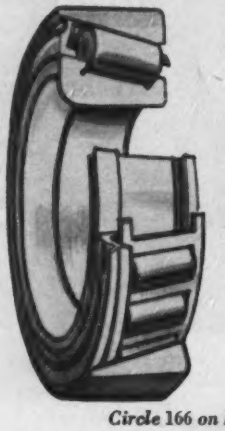
DIRT AND MOISTURE DID THE DAMAGE. The bearing ring on the left failed prematurely because fine dirt particles acted as an abrasive, causing wear. The bearing on the right had to be replaced because of the abrasive action of rust.

START WITH PROPER STORAGE. New bearings come wrapped in dustproof paper. If this wrapping is opened or torn, wash the bearing. Use a clean pail of kerosene or light oil. Dry bearing with compressed air, then dip in anti-rust compound, rewrap and box.

LOVE THAT LUBRICANT and those oil cans and grease guns! Clean oil and grease will carry dirt out when they purge the old lubricant. Whereas, dirty oil and grease carry dirt with them into the bearing. So keep your lubricating equipment clean and don't use lubricants that have been exposed to dust and dirt.

SAVE YOURSELF SEAL TROUBLE. Replace bent or worn seals (which allow dirt to enter) when you install or inspect bearings. You can now get tight, effective double-lipped TySeal tapered roller bearings that fit exactly the same space as standard unsealed tapered roller bearings.

A BEARING IS A BARGAIN! For relatively little money you get a bearing that's made of fine steel which has been heat treated, machined, polished, tested and checked over 100 times. Treat your bearings right and they'll give you the thousands of hours of operation for which they're engineered.



BEAR DOWN ON BEARING DOWNTIME—RELY ON THE TECHNICAL SERVICE OF AUTHORIZED SKF DISTRIBUTORS

SKF MOTION ENGINEERING

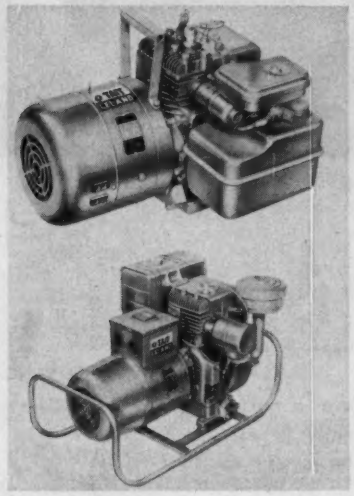
Advanced ball and roller bearing technology

6113

Circle 166 on Reader Service Card

EQUIPMENT NEWS...

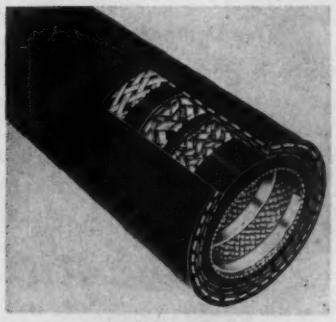
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Generator Line Features Portability

A line of portable electric generating plants has been introduced by Tait. Compactly designed for portability, the plants are intended for use in areas beyond the reach of power lines. Seven units, ranging from 1 to 5 kw, are available. Weight ranges from 65 to 395 lb. Smaller models have a carrying handle; two-man units have handle bars, and the 5-kw model rides on a dolly.—Tait Manufacturing Co., Dayton, Ohio.

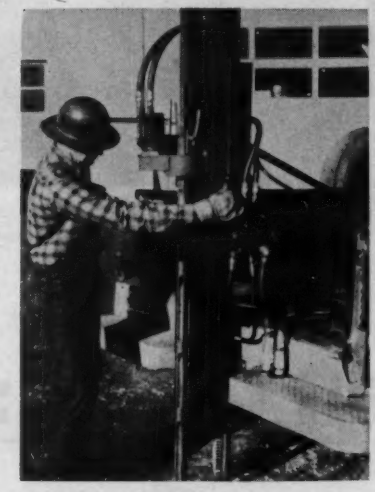
Circle 323 on Reader Service Card



Steam Hose Designed For Heavy Construction Uses

Saturated steam pressures up to 200 lb at 366 deg F are possible with a new steam hose for use with pile drivers, steam hammers and portable pumps. A neoprene tube is lined with asbestos fabric and flat steel spirals. The strength member is two braids of non-corrosive steel wire, and the cover is oil-proof neoprene. — Raybestos-Manhattan, Inc., Passaic, N.J.

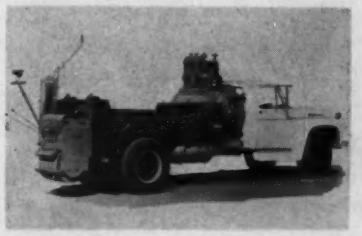
Circle 324 on Reader Service Card



Soil Sampler Has Hydraulic Power

A single operator can take undisturbed soil samples at depths to 35 ft with this hydraulically powered machine. A traveling extension bar operates through the rotary head and has a lever- controlled spring pin. The Model GS has a four-way leveling device and stabilizer for positive coring. A hydraulically powered rotary head takes both auger and probing tools. The unit can be set up or taken down in 10 min.—Giddings Machine Co., Fort Collins, Colo.

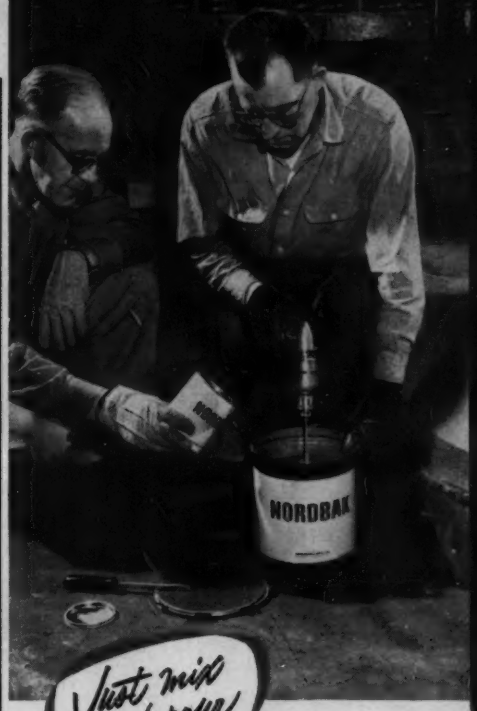
Circle 325 on Reader Service Card



Asphalt Maintenance Equipment Mounted on Truck

Essick's Patch Force Unit for street maintenance includes: a 200-gal emulsion sprayer; 58-cfm air compressor; 28-in. vibrating roller; portable asphalt surface heater and LP gas tank and hose; and a 60-gal water tank. The unit is mounted on a specially built 2-ton truck.—Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.

Circle 326 on Reader Service Card



Just mix and pour

NORDBAK®

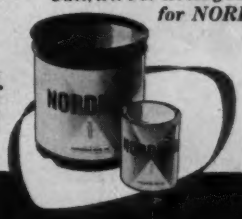
Tough, Resilient,

Non-Metallic

Here it is! NORDBAK . . . the manganese backing you pour at "room temperature." You simply mix the contents of two cans together and pour!

Field tests and on-the-job experience show that NORDBAK really works! Because it's resilient and non-shrinking, it provides excellent backing. It's so tough that in a prolonged test the manganese wore through in spots, but NORDBAK remained uncracked. It's easily removed at changeout, too. You can store NORDBAK at your operations . . . get a supply to keep on hand, ready for the next time you replace liners.

Call, wire or write your order for NORDBAK!



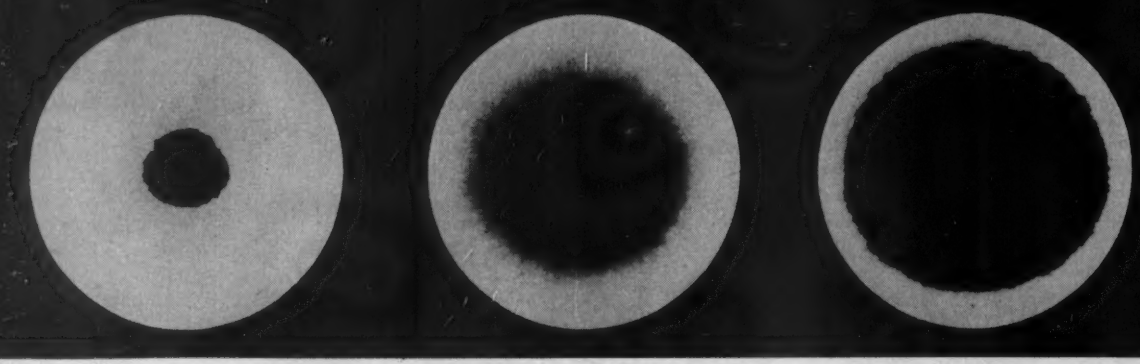
NORDBAK is a Trademark of the Nordberg Mfg. Co.

M61-9

NORDBERG MFG. CO.

Milwaukee 1, Wisconsin

Circle 167 on Reader Service Card ➤



3 drops of oil—3 conditions. First oil doesn't spread and has lost dispersancy. Second oil spreads into paper, has good dispersancy. Third spot indicates good dispersancy, but high soot level. Shell "Oilprint" Analysis can give you advance warning of engine trouble.

BULLETIN:

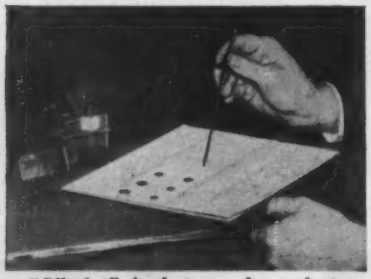
Shell 5-minute "Oilprint" Analysis shows what's going on inside your engines; now used by over 500 fleet operators

Now, with Shell's ADC® "Oilprint" Analysis, you can test used engine oils in your own shop. And in a matter of minutes.

Read how this unique testing process can give you advance warning of engine trouble, help you set up more effective maintenance schedules and reduce roadside breakdowns.

A DROP of oil from an engine is an excellent indicator of the lubricant's condition and—to the experienced eye—of the engine's condition.

It can tell you if the oil is still satisfactory for continued service. It can provide clues to faulty carburetion. It can show a coolant leak. It can help you schedule proper oil drain intervals. And much more.



"Oilprint" Analysis can be made in your own shop.

How do you get this information quickly?

Over 500 fleet operators have found the answer in Shell's 5-minute "Oilprint" Analysis.

All that's needed: Shell's ADC "Oilprint" Analysis Chart and a warmed-up engine.

A few drops tell the story

Take the problem of sludge accumulation.

If the oil makes a dark concentrated spot, it has lost its ability to hold sludge particles in suspension. Poor dispersancy, our technical people call it. The oil should be changed.

By adding Shell Indicator Fluid, a Shell Representative can tell if the oil still has its anti-wear properties. In Shell's Motor Oils for fleet use, these properties guard against engine wear.

You can also determine the relative amount of soot and contaminants—such as wear debris and dust that might foul your engine. If there's a water leak or anti-freeze contamination, proper evaluation of an oilprint will reveal it.

Free Demonstration

Your Shell Industrial Products Representative will gladly give you a free demonstration of the Shell ADC "Oilprint" Analysis. He will show you how to set up a "life cycle" report of every engine you operate. Call him today.

SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are helping to provide better products for industry.

Circle 168 on Reader Service Card

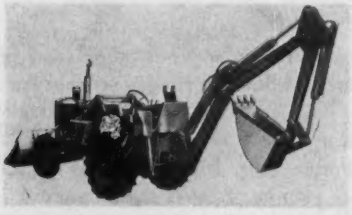
EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

New Crane Features Four-Speed Transmission

A new P&H 25-ton truck crane has a four-speed transmission in the upper machinery, allowing the operator to pick up heavy loads at low engine speeds with added precision. As standard equipment the model 325-TC also has independent power boom hoist; the boom can be lowered as well as raised under power. A live roller circle acts as a free runing roller bearing for a balanced swing of the upper machinery. Other features include an integral main gear housing; torsion bar front axle suspension; hydraulic controls; and friction-type swing brake and air brakes on all six wheels. The unit can handle a boom length of 110 ft plus 30 ft of jib. As a clamshell or dragline, it has a rating of 8,000 lb. — Harnischfeger Corp., Milwaukee, Wis.

Circle 327 on Reader Service Card



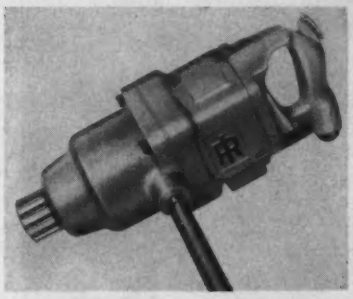
Loader, Backhoe Fit Oliver Tractor

Ware is now making matched equipment for the Oliver 770 tractor. The Ware 778 loader attachment has a ¾-yd rated capacity and 66-in. bucket width. Other features of the loader are a 40-deg bucket breakout; 8,000-lb breakout capacity; automatic bucket leveling; and a rated lift of 5,100 lb to full height. The Model 450 Hydro-Trencher has a bucket breakout capacity of 10,-100 lb. Digging depth exceeds 14 ft, and digging reach is 20 ft, 7 in.—Ware Machine Works, Inc., Ware, Mass.

Circle 328 on Reader Service Card

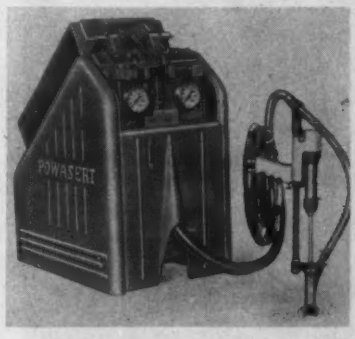
Impact Wrench Delivers 700 Blows a Minute

This new Impactool enables one man to handle heavy nut-running jobs usually requiring two men. The Model 844 Air Impactool, which has a capacity of 1½-in. bolt size, weighs 33 lb without the socket. The tool is 1⅜ in. shorter than its predecessor. Its length is 14¾ in. measured to the shoulder of the spline drive.



The impact mechanism has an average rate of 700 impacts a minute at 90 psi.—Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

Circle 329 on Reader Service Card

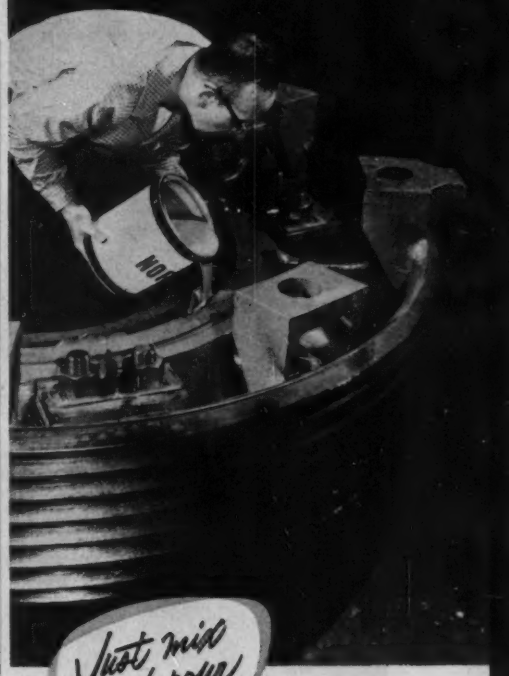


Feeder Improves Automatic Nail, Screw Machines

An improved feeder unit speeds the operation of Powasert automatic nailing and screwdriving machines. Nails or screws are dumped into a tray in the new feeder where they are aligned point-first and fed singly through a transparent, flexible hose to the tool. Air at 90-psi is used.—United Shoe Machinery Corp., Boston, Mass.

Circle 330 on Reader Service Card

Circle 169 on Reader Service Card ➤



Just mix and pour

NORDBAK®

It's Simple, Safe and Sure...

It had to happen . . . someone was bound to find a way to end the problems of backing manganese crusher parts with molten metal!

Now . . . you can do it with NORDBAK!

It's mixed at "room temperature" and poured right from a can into the crusher cavities. Gone is the need for special melting and pouring equipment . . . and gone are the hazards of pouring hot metal.

An initial, low cost order to back one set of crusher parts will prove the many advantages of NORDBAK *. . . call, write or wire your order today!*

NORDBAK is a Trademark of the Nordberg Mfg. Co.

H281-1/3

NORDBERG MFG. CO.

Milwaukee 1, Wisconsin

Give your toughest wire rope jobs to **Purple Plus**

Brute Strength

For any job requiring brute strength, Bethlehem Purple Plus, with IWRC, is the rope to use. This top-flight rope is specially engineered, and is rated 15 pct above the catalog strength of Bethlehem Purple Strand—a fine rope in its own right.

Abrasion Resistance

Ability to resist abrasion is where Purple Plus shines. With its tough wires, and the extreme care with which the rope is made, it will give excellent service on jobs where abrasion is a dominant factor.

Durability

Purple Plus reduces wire rope costs because it is built for rugged service. Put it on your roughest jobs and watch it perform.

Purple Plus, with IWRC, is far and away your best buy for the toughest jobs. It's Preformed for easy handling.

Steel

for Strength
. . . Economy
. . . Versatility

There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots.

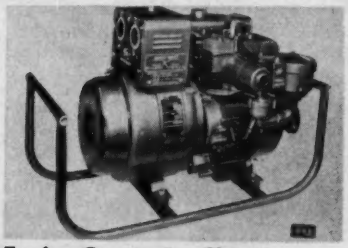
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL
BETHLEHEM WIRE ROPE

EQUIPMENT NEWS . . .

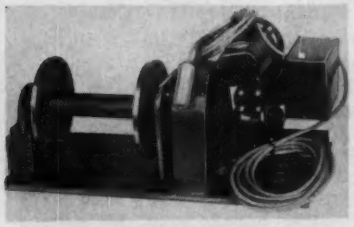
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Engine Generator Has Automatic Idling Control

An automatic idling control saves fuel costs in the Super Lite engine generator. Motor loads up to 2 hp are possible with the unit, rated at 3,000-w intermittent duty. Designed for manual, electric or remote starting, the new generator is available with a choice of five mountings.—Wincharger Corp., Sioux City, Iowa.

Circle 331 on Reader Service Card



160-lb Electric Winch Hoists up to 4,000 lb

A new portable electric winch-hoist with a single line pull of 4,000 lb is 13 in. wide, 21½ in. long, 11 in. high and weighs 160 lb. Powered by a 110-v, single-phase, 60-cycle ac motor, the Myte Super has a drum capacity of 325 ft with ⅜ in. cable or 185 ft with ½ in. cable. The unit includes 15 ft of 110-v cable and a 10-ft remote control cable with forward and reverse switch.—City Engineering Co., Indianapolis.

Circle 332 on Reader Service Card

Reversible Spreader Converts in Motion

This hydraulic spreader can spread before or behind the carrier's rear wheels without reversing the hopper, and can change over while the truck is moving. Dual 14-in. spinners located in front of the rear wheels and single 18-in. spinners at the rear are

operated by a selector valve in the cab. The spinners work independently, allowing the operator to change from front to rear spreading by flipping the selector valve.—Shunk Mfg. Co., Bucyrus, Ohio.

Circle 333 on Reader Service Card

Alley Special Compacts In Narrow Work Areas

The Ferguson Alley Special is less than 8 ft wide for compaction on city streets, alleys, and highway shoulders. The water ballasted sheepsfoot roller has pressures up to 495 psi and can work at 5 mph. The transmission operates in either direction. Gasoline or diesel 70-hp engines are available.—Shovel Supply So., Inc., Dallas, Tex.

Circle 334 on Reader Service Card

Three-Speed Axle Provides Extra Transmission Range

Two of Eaton's two-speed truck axles have been redesigned into three-speed tandem axles. Each transmission gear now has three close gear steps; low, intermediate and high. The lever controlling the three positions is on the gear-shift knob (photo), and can be moved by the driver's thumb or forefinger. — Eaton Mfg. Co., Cleveland, Ohio.

Circle 335 on Reader Service Card

Circle 171 on Reader Service Card ▶

Just mix and pour

NORDBAK®

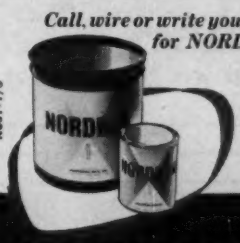
It's the modern, effective way to back manganese

Non-metallic NORDBAK streamlines crushing operations of every kind. It's as easy to use out in the field as it is in the plant. You mix it and pour it right on the job...*wherever* your crusher is. No need for special melting or pouring equipment.

NORDBAK fills extremely narrow voids and is only ¼ the weight of metallic backing agents. Conveniently packaged, NORDBAK is *the one* modern, effective backing agent for manganese crusher parts!

You can use NORDBAK in ALL TYPES of crushers, grinding mills and other machinery where backing agents are required.

Call, wire or write your order for NORDBAK!



NORDBAK is a trademark of the Nordberg Mfg. Co.

N361-1/3

NORDBERG MFG. CO.

Milwaukee 1, Wisconsin

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Unit Transfers Dry Batch To Transit Mix Trucks

The portable Trans-A-Batch receives dry batch material from trucks and transmits the batches to transit mix trucks at the pouring site. The unit has a 1¼-yd hopper for receiving batches, positive drive feed belt under the hopper, and inclined transfer belt, water meter and piping assembly and an air-cooled gas engine with electric starter and clutch. The transfer belt is enclosed.—Koehring California Co., Stockton, Calif.

Circle 336 on Reader Service Card

Records from construction, logging and drilling firms prove off-the-road steel cord tires reduce downtime and cut operating costs—no matter how heavy the loads or how rugged the job. They provide many more hours of trouble-free service than conventional textile tires.

With thinner sidewalls, they run 20°F cooler. Yet sidewalls are up to 10 times stronger—for added resistance to blowouts, impact breaks, cutting and abrasions. They're fortified with 4 plies of 400,000 psi high tensile carbon steel wire from bead to bead. Steel cord tires have a double extra-ply rating— solid proof of strength and high load capacity.

New, technically improved steel cord tires make seldom-needed repairs easy.

Increase service hours and number of retreads by specifying tires made with Bekaert Steel Wire Cord.

Write for free data booklet

PLEASE SEND ME A COPY OF YOUR BOOKLET

Bekaert *Steel Wire Corporation*

320 PARK AVE., NEW YORK 22, NEW YORK, DEPT. F

NAME_____ COMPANY_____

ADDRESS_____

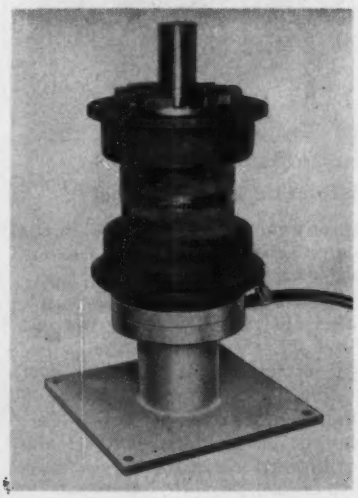
CITY_____ ZONE_____ STATE_____

BEKAERT STEEL CORD, ZWEVEGEM, BELGIUM • Among Europe's Foremost Steel Wire Producers Since 1880

Circle 172 on Reader Service Card

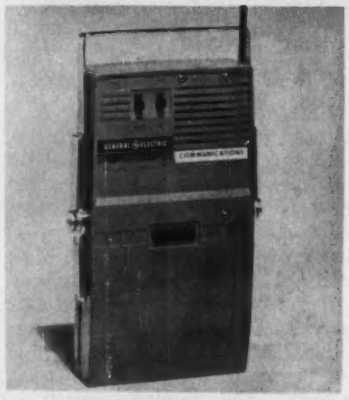
Fixture Grease-Loads Wheels, Idler Assemblies

Owatonna has developed a special greasing fixture for grease-loading Allis-Chalmers crawler tractor truck wheels and track idler assemblies that have solid shafts. OTC No. AC-400 consists of a basic stand used for all models and six special adapters



to handle truck wheels and track idlers on HD-6, HD-11, HD-16, and HD-21 crawler tractors.—**Owatonna Tool Co., 380 Cedar St., Owatonna, Minn.**

Circle 337 on Reader Service Card



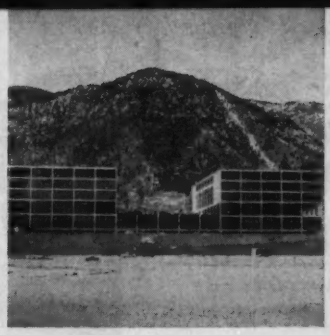
Two-way Portable Radio Has High Power Output

The Voice Commander, a two-way portable radio, weighs about 3 lb and has a 1-w transmitter rf power output. For frequencies of 132 to 174 mc, the unit has a built-in speaker, microphone and telescopic antenna. The speaker is driven with 300-mw of audio power. — General Electric Communication Products Dept, Lynchburg, Va.

Circle 338 on Reader Service Card

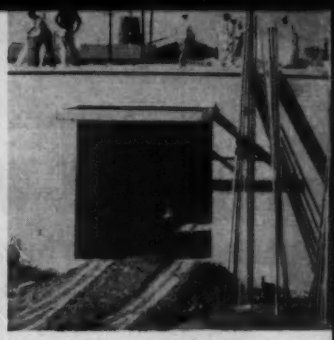
Circle 173 on Reader Service Card ➤

NEW SENATE OFFICE BUILDING
Washington, D. C.

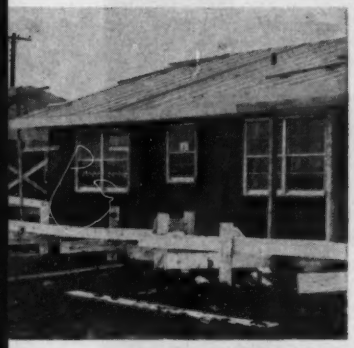


U. S. AIR FORCE ACADEMY
Colorado Springs, Colo.

MISSOURI RIVER BRIDGE
St. Charles, Mo.

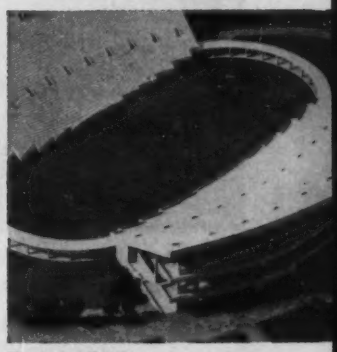


CHENNAULT AIR FORCE BASE
Lake Charles, La.

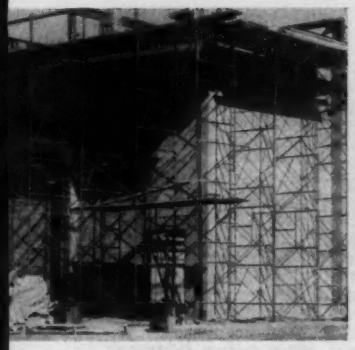


BISSONET PLAZA
New Orleans, La.

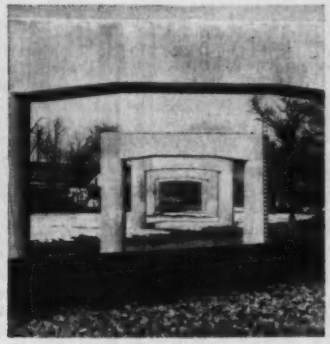
On the job at the TOP TEN!



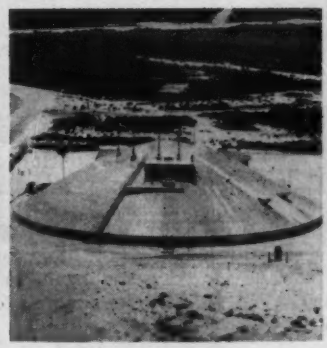
FOOTBALL STADIUM
Indiana University



MINOT AIR BASE PROJECT
Minot, N. Dakota



ROUTE #15 BYPASS
Amity Hall, Pennsylvania



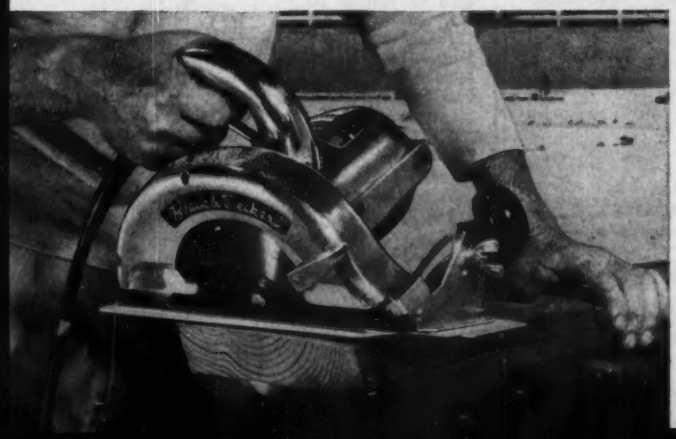
CAPE CANAVERAL MISSILE
CENTER, Cocoa, Florida

GLENWOOD REDEVELOPMENT
PROJECT,* Minneapolis, Minn.

America's top construction jobs pick world's toughest saw, Black & Decker

From coast to coast . . . under roughest field conditions . . . leading contractors and builders specify Black & Decker Saws. Why? For better control in the wood. For dependable operation.

*Courtesy Minneapolis Star & Tribune



For solid all-round performance and more board feet per day. Black & Decker Saws turn out the work fast with less downtime. A trial on the job will convince you! Write for free demonstration!

For sales or service, look in the Yellow Pages of the telephone book under . . . TOOLS ELECTRIC

Black & Decker®
WORLD'S LARGEST MAKER OF POWER TOOLS

THE BLACK & DECKER MFG. CO., Dept. 2209
Towson 4, Md. (In Canada, Brockville, Ont.)

☐ Arrange a free demonstration of the world's toughest saws.
☐ Send additional information on_____

Name_____ Title_____

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Address_____

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☐ Hammers ☐ Drills ☐ Impact Wrenches ☐ Jig Saws

Again...

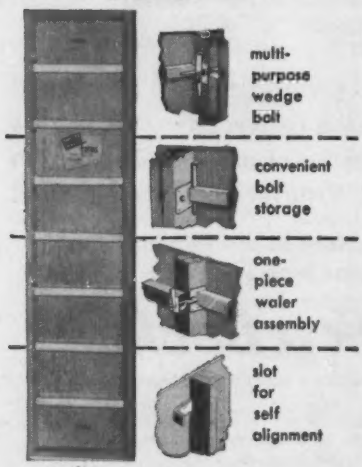
SIMPLEX-WACO

Comes Through on a Big One

adaptability and flexibility of Simplex-Waco Forms proved on giant shopping center

- Simplex-Waco Forms went up with ease in forming 32' battered wall and counterforts at suburban Minneapolis' Southdale Shopping Center.
- Robertson Q. panels nailed to Simplex-Waco panels to produce architectural finish in other parts of project.
- Forms were used both vertically and horizontally . . . proving Simplex-Waco flexibility! Over 26,000 sq. ft. of forms used on this project.
- Forms available on sales or rental/purchase plan.

DISTRIBUTORSHIPS OPEN IN CHOICE AREAS



Send Your Plans for Free Layout and Cost Estimate

SIMPLEX INDUSTRIAL FORMS, INC.

5629 Industrial Avenue
Rockford (Loves Park) Illinois

Circle 174 on Reader Service Card

New Product Briefs

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

VIBRATORY ROLLER. the Vibra-Twin, has an 82-in. rolling width and compaction effort up to 30 tons. Another machine, the Vibra-Tandem, has a 40-in. rolling width and 12-ton compaction effort.—Aeroil Products Co.

Circle 339 on Reader Service Card

HIGH JOBS can be done by one man with the Hy-Drive electric truck. The driver can step onto the elevating carriage and operate the unit from above—Raymond Corp.

Circle 340 on Reader Service Card

OIL COOLERS with increased capacity for engine and torque converter oil are available for International's Model 295 Payscraper. The new units are series-flow, replacing parallel-flow coolers. — Construction Equipment Div., International Harvester Co.

Circle 341 on Reader Service Card

SOIL EXPLORATION kit that has sampling tools for most overburden materials to shallow depths has been added to Penndrill line. —Penndrill Mfg. Div.

Circle 342 on Reader Service Card

FLOTATION TIRES have been made standard equipment on White's concrete batch trucks and mixer chassis. They can be ordered as replacements on present vehicles also.—White Motor Co.

Circle 343 on Reader Service Card

CLAY BREAKER for continuous chopping of clay and ore feed in processing systems feed in a series of meshing paddles on each of two paddle shafts. It can be custom-built to any size.—McLanahan Corp.

Circle 345 on Reader Service Card

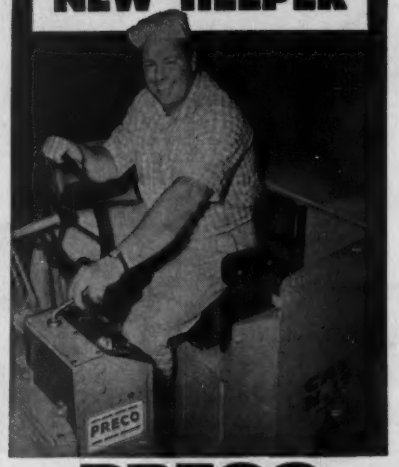
TWO-WAY RADIO with dual frequency listening through one receiver limits extra battery drain. The transistorized unit can be used where separate intra-company dispatching systems use two frequencies. — General Electric Co.

Circle 346 on Reader Service Card

continued on page 176

MOTOR GRADER OPERATORS!

MEET OUR NEW HELPER



PRECO

AUTOMATIC BLADE CONTROL

It's a slope-holder, time-saver, cost-cutter, and grading engineer! It gives me a third hand in the operation of my grader.

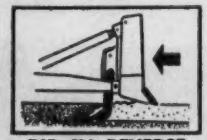
The PRECO Automatic Blade Control maintains cross slope accurately and AUTOMATICALLY! I just set the dial and go to work. It leaves me free to use my judgement — and both hands — to handle the material and produce a smooth longitudinal grade.

Effective on all work, from roughing in and spreading material to rigidly controlled fine grading, the PRECO Blade Control helps me get the job done easier, faster, more accurately, and at less cost. PRECO also helps me help my boss by permitting savings in engineering and staking costs — I need only one row of blue-tops for even the most precise grading. The PRECO also helps produce smoother surfaces; this, in turn, allows uniform thicknesses of base and paving materials, and substantial savings in both.

Proved, dependable, and easy to service, the all-transistor PRECO Automatic Blade Control is available on Caterpillar and LeTourneau-Westinghouse Motor Graders. Hire this efficient, productive helper today. Get a PRECO Blade Control installed on your motor grader now.

PRECO makes it easier for dozer operators, too! PRECO Back Rippers eliminate "deadhead" dozer reverse. They give you two-way, doubly-effective dozer production — forward and reverse. To look good in the cut and on the ledger get your tractors equipped with PRECO Back Rippers now.

DOZE IN FORWARD

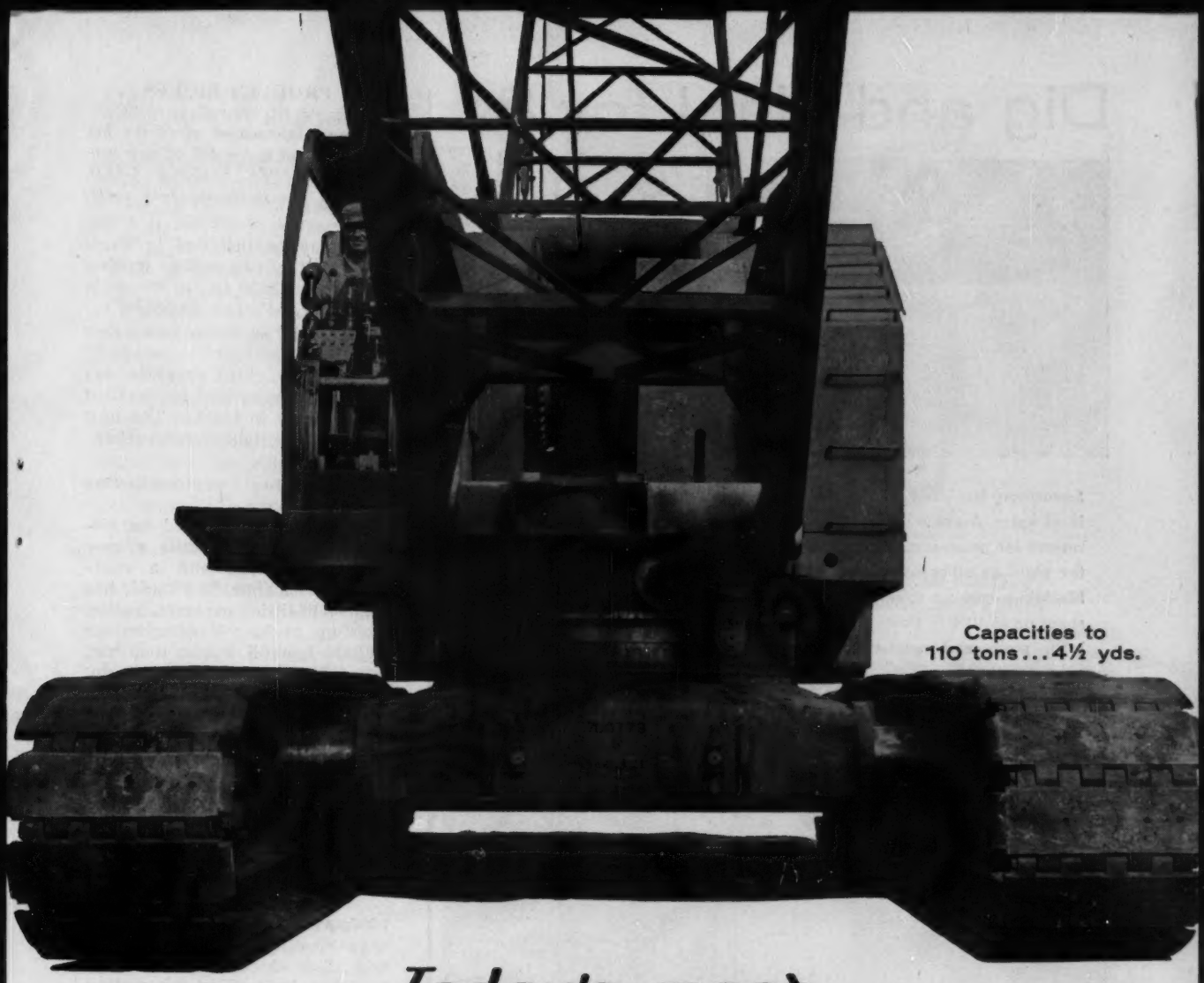


RIP IN REVERSE

WRITE, PHONE, OR CABLE FOR ALL THE PRECO FACTS OR SEE YOUR PRECO DEALER

PRECO INCORPORATED

Circle 255 on Reader Service Card



Capacities to
110 tons... 4½ yds.

Today's most modern crane

It's the all-new 900 Series AMERICAN — the machine that re-wrote the book on what a big-capacity crane *should* be! First, let's make this clear: We're not talking about a warm-over of a previous model. Nor a beefed-up version of a smaller machine. But a *completely new design*, from tracks, to deck, to boom tip. As such, the 900 Series crane gives you every advantage of modern-day engineering — plus operating features not found in any other machine — all in a perfect balance of weight, power, and high-strength materials. Of course, it's easily converted from crane to backhoe, shovel, dragline or clam.

Performance? Don't take our word for it. Ask 900 Series owners — like *Winston Bros. Co., Dravo Corp., Duval Eng. & Constr. Co., or S. J. Groves & Sons.* Or have a talk with your AMERICAN distributor. Have him show you the differences that *make* this machine the top-performer in its class. Very honestly, we believe it will be well worth your time.

CC-731

EXCAVATORS
½ to 4½ yds.

CRANES
12½ to 110 tons

DERRICKS-HOISTS
to 800 tons

REVOLVER CRANES
to 400 tons

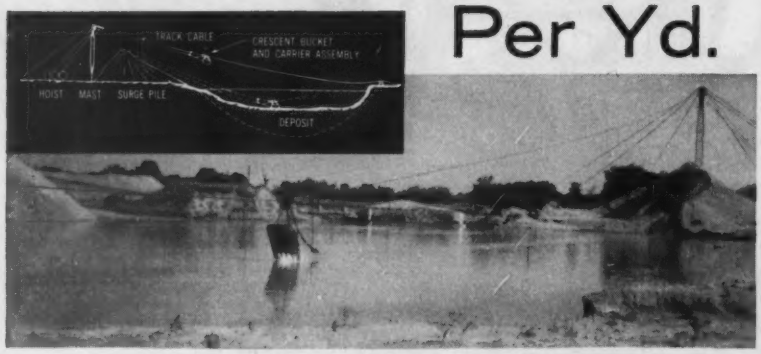
FORGED FITTINGS
FOR WIRE ROPE
AND CHAIN
(Crosby-Laughlin Div.)

AMERICAN

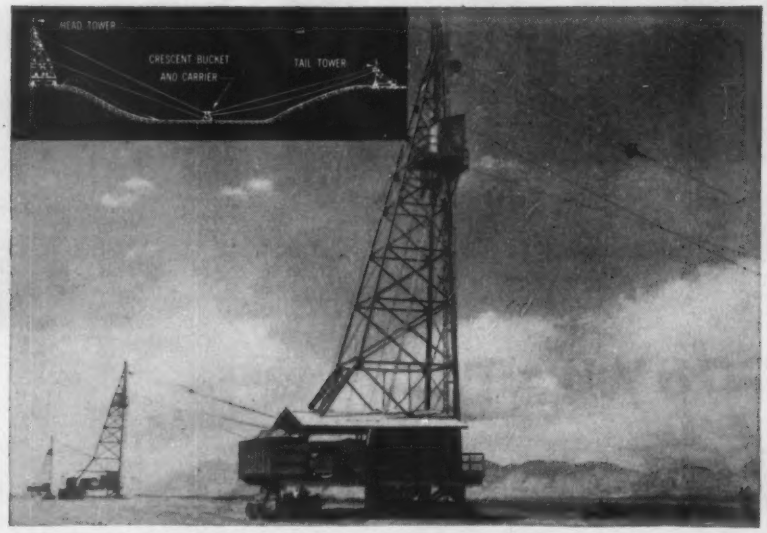
AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

Circle 175 on Reader Service Card

Dig and Haul for 8¢ Per Yd.



Sauerman Slackline Cableway excavating hard-to-dig flat rock from 70 ft. of water. Average hauls are 450 ft. to a surge pile which provides a ready reserve for processing. It also allows digging and hauling to continue when the plant or other equipment is down due to weather or other stoppage. Slacklines can dig from ground level to 125 ft. below water, operate over spans up to 1000 ft. Costs from pit to pile average about 8¢ per yd. including labor, power and maintenance.



Sauerman Tower DragScrapers, each equipped with a 5-yd. Crescent bucket, digging and hauling from a lake-bottom deposit. Each 100-ft. head tower is mounted on four sets of tracks. Operating span averages about 1000 ft. The high water table and occasional flooding of the fill area make the job an excellent one for Sauerman Machines, as the wet, sticky material does not provide good footing for wheeled equipment.

Sauerman Machines . . . work high banks . . . deep pits . . . or under water. In most cases, one operator handles digging and hauling from excavation point to hopper or surge pile. Controls can be remotely located for maximum visibility of material and plant.

Request recommendations on your material handling job. Ask for Catalog A for information on Drag-Scrapers in sizes to 15 yds. and Catalog C for information on Slackline Cableways in sizes to 3½ yds.

SAUERMAN BROS., INC. 612 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Circle 176 on Reader Service Card

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

DESK may be installed in truck or car without tools. The writing surface is 12x20 in., in masonite or plastic.—Mishek Supply Co.
Circle 347 on Reader Service Card

VOLTMETER to check generator capacity can be carried or installed permanently in tractor. The unit has a hooded light switch.—Cole-Hersee Co.
Circle 348 on Reader Service Card

VERSATILITY is increased on Oliver's 550 tractor with a new front-end loader and a rear-mounted backhoe. The loader has a 1,800-lb lifting capacity, bucket sizes up to ⅞ yd. Attachments include backfill blade, tool bar, fork lift and crane.—Oliver Corp.
Circle 349 on Reader Service Card

SAFETY DEVICE for controlled lowering of personnel and equipment allows operator to control descent with finger-tip pressure. It can be used with safety belt, boatswain chair, or stretcher.—Atlas Safety Equipment Co.
Circle 350 on Reader Service Card

TOW ATTACHMENT for LeTourneau-Westinghouse Tournapulls will allow older machines to extend life by pulling compaction tools.—Robison Mfg. Co.
Circle 351 on Reader Service Card

CONCRETE VIBRATOR produces 10,500 rpm with a 180-cycle, 230-v motor built into the vibrator head. The 20-in. head is available in 1¾ or 2⅜-in.-dia.—Viber Co.
Circle 352 on Reader Service Card

KNOCK DOWN safety rolling ladder is assembled with a wrench and screwdriver. The steel units are available in 19 to 66½-in. heights, with or without handrails, and 17½ to 25½-in. widths.—Patent Scaffolding Co.
Circle 353 on Reader Service Card

ADDED CAPACITY for the H-30 Payloader tractor shovel is available in a version with 1¼-cu-yd bucket, a ¼-yd increase. The H-30B also has new handrails, safety ladder and transmission controls.—Frank G. Hough Co.
Circle 354 on Reader Service Card

continued on next page

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

POWER TROWELS in eeven models, 30 to 46-in.-dia, have been added to Whiteman's line. A switch prevents the unit from running wild if operator drops handle.—Whiteman Mfg. Co.

Circle 355 on Reader Service Card

CRESCENT RATCHET has an oil-resistant neoprene rubber plug inside the ratchet to eliminate fragile springs. The tool has seven parts.—Crescent Tool Co.

Circle 356 on Reader Service Card

WATERSTOP can be installed without splitting the form. It is nailed to the concrete form to hold it in position during pouring—W. R. Meadows, Inc.

Circle 357 on Reader Service Card

HEAVY DUTY series of hydraulic pumps are rated at from 40 to 95 gpm at 1800 rpm for fluid power systems to 2000 psi and 2500 psi, and operating speeds to 2800 rpm. —Hydreco Division, New York Air Brake Co.

Circle 358 on Reader Service Card

GEAR PUMPS rated at 2500 psi, with output ranging from 7 to 97 gpm at 1800 rpm, are self-lubricating. Oil is metered automatically from within pump. Three series are available for continuous duty.—Commercial Shearing & Stamping Co.

Circle 359 on Reader Service Card

DRILL BITS for small dia holes in hard material have carbide cutting teeth, in sizes from ½ to 1¼-in.-dia.—New England Carbide Tool Co.

Circle 360 on Reader Service Card

VALVE has a quadruple thread for speed and control of oxygen cutting jet, for Harris's line of machine cutting torches. — Harris Calorific Co.

Circle 361 on Reader Service Card

SPRAYERS in Aeroil's extended line include vertical units with capacities up to 20 gal, compressed air horizontal sprayers with 3 and 6-gal capacities, and portable hand pump units of 4 and 5-gal capacities. — Airoil Products Corp.

Circle 362 on Reader Service Card

This Hobart "Mainliner" gives you more for your money . . . Ready on a moment's notice to weld anywhere . . . at a profit

Its arc is dependable, hot, stable. Pick any one of 500 welding heat settings through an exclusive Multi-Range control. Change from straight to reverse polarity by a mere flip of a switch. An automatic idling device saves fuel. Big 25 gallon fuel tank permits extended field operations. Hinged side panels close, can be padlocked. Choose either a world famous Willys Jeep or a rugged diesel engine.

For exacting pipeline, structural, and in-the-field welding—get a Hobart "Mainliner." For more information, contact:

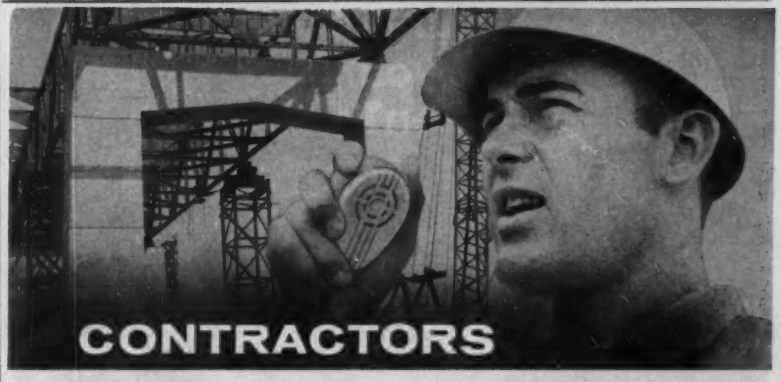
HOBART

HOBART BROTHERS CO., Box 691, Troy, Ohio, Phone FE 2-1223

"Manufacturers of the world's most complete line of arc welding equipment"

International Sales, Hobart Brothers A.G., Box 5500, Nassau, Bahamas

Circle 177 on Reader Service Card



2-WAY RADIO from $134.95

• Cut costs—speed construction! Instant contact on the job!

Save valuable time as you cut operating costs with the Viking "Messenger"! Used by thousands of truckers, contractors and construction crews throughout the country! Finest Citizens' Transceiver available—excellent sensitivity and selectivity for maximum range. 23 channel coverage—instant choice of any 1 of 5 channels. Maximum legal power—dozens of operating and convenience features—easy to install anywhere. Complete with crystals for one channel.

VIKING *Messenger*

SEND FOR FREE COLOR BROCHURE!

• Send full details on the "Messenger"

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E. F. JOHNSON COMPANY

2001 Tenth Ave. S.W. • Waseca, Minnesota

Manufacturers of the world's most widely used personal communications transmitters!

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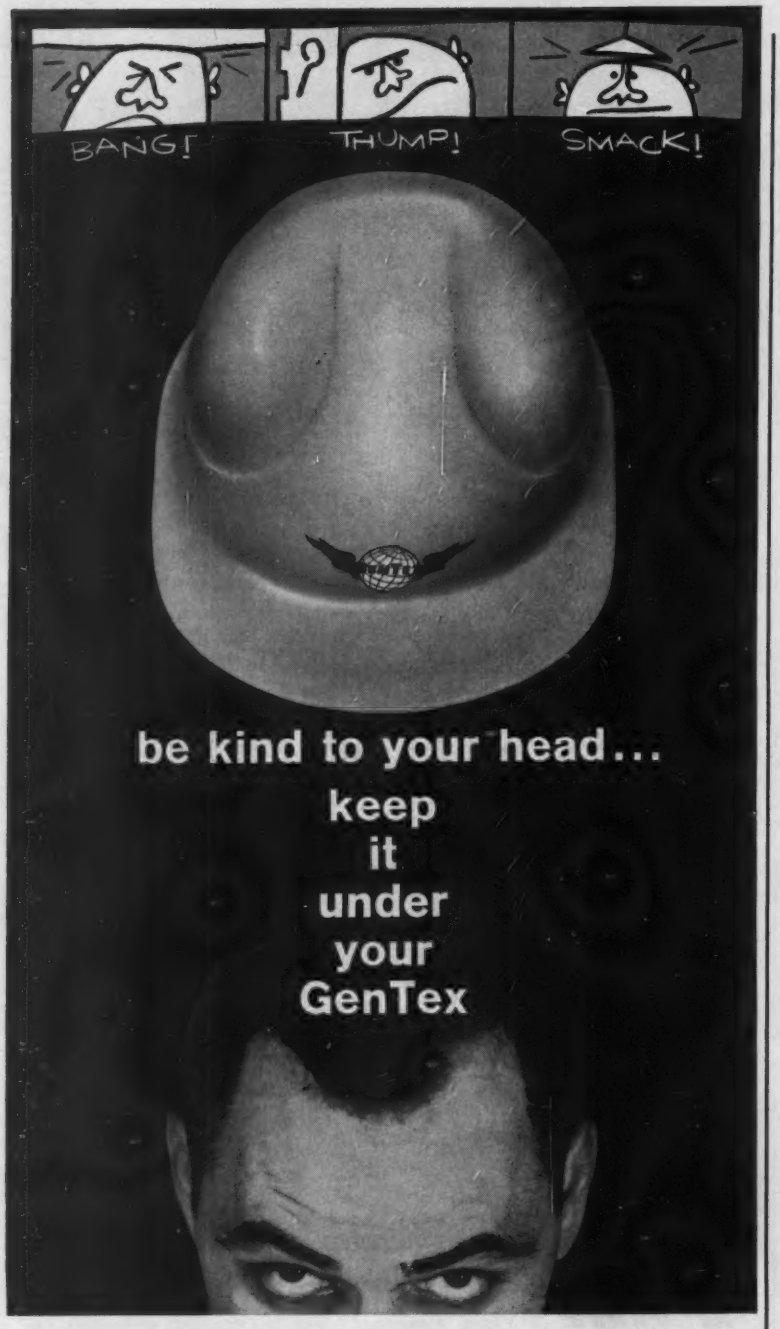


Read meters? Work in close quarters? Then protect your head with the lightweight, general duty GenTex bump cap. Total weight, 8 oz.; wear it comfortably all day. Resists dielectric shock up to 5,000 volts. **Outside:** sturdy composition shell cleans easily with soap and water. Just "wipe and wear." Choice of nine colors. **Inside:** adjustable headband with crown-cushioning shock absorber pad. Makes every work day bump-free . . . the good looking, general duty GenTex bump cap. Write for details. Another quality product from: GenTex Corporation, 450 7th Avenue, New York 1, N. Y.

GENTEX SAFETY HATS 61-9

Circle 178 on Reader Service Card

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

ROLLER RENTAL — A roller rental plan is described in booklet DM-37. All models in the Galion line of tandem, three-wheel and pneumatic-tire rollers are available under the rent-a-roller plan.—The Galion Iron Works & Mfg. Co., Galion, Ohio.

Circle 363 on Reader Service Card

PNEUMATIC-TIRE ROLLERS—The engineering theory behind pneumatic compaction and tips on how to best obtain maximum compaction are contained in Bulletin 410. The publication also introduces the AMPAC-4, with 16 wheels and front-wheel drive.—American-Marietta Co., Construction Equipment Div., Milwaukee 1, Wis.

Circle 364 on Reader Service Card

STEEL PRODUCTS—An 8-p. catalog contains data on all Shlagro steel products, including triangular girders, square columns, vertical member longspan joints, tied arch-beams, and prefabricated buildings.—Shlagro Steel Products Corp., Somerville 43, Mass.

Circle 365 on Reader Service Card

TRUCKS—A brochure describes FWD's model 6-627 ready-mix and dump truck, designed for states with special requirements and weight restrictions, and illustrates typical legal loadings of the truck for both ready-mix and dump operations.—Marketing Services, FWD Corp., Clintonville, Wis.

Circle 366 on Reader Service Card

WASHER CHART—A size-'em-up-yourself washer chart shows 14 different sizes of washers with accurately die-cut holes to check the fit for specific bolt sizes needed. Included on the chart are washer dimensions of inside and outside diameters and thicknesses for certain bolt sizes.—The Paine Co., 501 Westgate Rd., Addison, Ill.

Circle 367 on Reader Service Card

continued on page 180

AN IMPORTANT NEW BLASTING TECHNIQUE PIONEERED BY HERCULES

PRESPLITTING is a forward step in the advancement of a more efficient blasting technique. This new method of controlled blasting, pioneered by Hercules Powder Company, produces "line-drilled" results without the excessively high costs of actual line drilling.

PRESPLITTING has the following advantages over normal methods of blasting:

1. Rock overbreak behind the PRESPLIT blast holes reduced to an absolute minimum—*less extra unpaid-for excavation and less concrete required because excess overbreak is eliminated.*

2. Fewer blast holes required than for line drilling—*extra dollar savings in drilling costs.*

3. Reduction in ground vibrations from primary blasting—*fewer complaints from nearby householders and industries.*

4. Sheer, clean rock wall obtained—*greatly reduced scaling time.*

5. Back shattering reduced—*much safer wall to work under; walls require less maintenance.*

6. Entire cut may be PRESPLIT with one blast—*saves resetting up time.*

Detailed technical information about PRESPLITTING is available in bulletin form. Ask your Hercules representative for a copy and learn how PRESPLITTING will reduce costs on your job.

Explosives Department

HERCULES POWDER COMPANY

INCORPORATED

Hercules Tower, 910 Market Street, Wilmington 99, Delaware

BIRMINGHAM • CHICAGO • DULUTH • JOPLIN • LOS ANGELES
NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO

XR-61-3

Circle 179 on Reader Service Card

New H-30 PAYLOADER®

has 25% more capacity

When the Model H-30 was originally introduced, more than a year and a half ago, it was far ahead of any other tractor-shovel in its class. It has been exceptionally well received by contractors, public bodies, sand and gravel producers, and many others — praised by owner and operator alike. Now, HOUGH'S continuing program of research, development and improvement, creates the new H-30 series "B" model — an even better machine.

More Capacity: With 1¼ cu. yd. bucket, this new model has 25% more capacity without sacrificing the exceptional stability and balance of the original H-30.

More Safety: The only loader in its class with boom arms positioned ahead of and away from the operator. It has walk-in operator compartment, new hand rails, new adjustable bucket seat and unmatched operator visibility.

Less Maintenance: The only loader in its class with simplified boom mechanism having 6 to 12 fewer pivot and grease points to service. All bucket and lower-boom pivot points sealed against dust and dirt.

More Power: More hp per pound than comparable loaders. Torque-converter proportions power properly between drive-train and hydraulic needs.

Better Braking: Only loader in its class with 4-wheel, sealed hydraulic brakes, and with "Operator's choice" dual brake pedals that permit operator to brake with or without transmission engaged. Exclusive HOUGH axle design allows servicing of brakes without removing and exposing the planetary hubs to dust and dirt.

It's the only loader in its class with full power-shift transmission that does not have to stop for "range" shifts . . . with separate fan-cooled oil-to-air radiator to cool torque-converter transmission oil . . . with closed, pressure-controlled hydraulic system to keep out air-borne dust and moisture.

For additional information, see your HOUGH Distributor or return the coupon.

HOUGH®

THE FRANK G. HOUGH CO.
706 Sunnyside Avenue
Libertyville, Ill.
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

Send data on new PAYLOADER — the Model H-30B.

Name _____
Title _____
Company _____
Street _____
City _____ State _____
9-8-2

Circle 180 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

COMPACTORS — Effective soil compaction with Master equipment is the subject of a new 4-p. folder. The Jumping-Jack compactor is recommended for cohesive-type soil. Models C-12 and C-36 vibratory compactors are especially useful for granular soil. —Master Vibrator Co., 1752 Stanley Ave., Dayton, Ohio.

Circle 368 on Reader Service Card

TIMBER CONNECTORS—A 12-p. catalog highlights the use of timber connectors, framing devices, and installation tools. — Timber Engr. Co., 1319 18th St., N.W., Washington 6, D.C.

Circle 369 on Reader Service Card

BRIDGE FINISHER — Bulletin 61-159 describes Rex's new bridge finishing machine, which can complete a 300-cu-yd pour within 5 hr with a crew of 10 men.—Chain Belt Co., Milwaukee 1, Wis.

Circle 370 on Reader Service Card

when you repower big machinery . . .

- input torque 150 to 2500 ft-lb
- standard or engineered to order
- low-cost production, whether quantity is 1 or 100
- all gears alloy steel—heat-treated
- all shafts mounted on ball or roller bearings, precision aligned

come to COTTA for heavy-duty transmissions and speed reducers

diagrams, complete specs sent free on request

COTTA
TRANSMISSION CO.
ROCKFORD, ILLINOIS

Circle 257 on Reader Service Card

VIBRATION SCREEDING—Bulletin 613, "How to Strike off Concrete by Vibration Screeding," explains the advantages of the method and where screeds can best be used. Information on the procedures for screeding floors, highways, bridge decks, and monolithic slabs also is presented.—Stow Mfg. Co., 31 Shear St., Binghamton, N.Y.

Circle 371 on Reader Service Card

DOZER BLADE — A spec sheet for the Model 6H varidozer blade lists weight, operating blade angles, and hydraulic system essentials. It also illustrates the positions obtainable with the unit. Built to complement the Cat D6B tractor, the Varidozer blade is hinged at the center and assumes the shape of any present dozer blade, straight, angle, "U," or tilt. Its full-hydraulic operation is controlled from a lever adjacent to the operator's seat. — Ulrich Mfg. Co., Roanoke, Ill.

Circle 372 on Reader Service Card

MASONRY CUTTING—A 24-p. catalog illustrates the line of Cardinal products used for masonry, concrete, and stone cutting. — Cardinal Engr. Corp., Philadelphia 27, Pa.

Circle 373 on Reader Service Card

CONVEYOR BELTING—A wall chart points out various ways to cut down wear and tear of conveyor belting through proper maintenance procedures. Subjects covered are: storage, record keeping, alignment, impact idlers, drive pulley lag, loading chute, skirting rubber, automatic switches, inspection schedules, lubrication fasteners, and repair. — Hewitt-Robins, Stamford, Conn.

Circle 374 on Reader Service Card

CORE DRILL—The 142-C core drill machine, which can be skid, truck, or trailer mounted, is described in bulletin No. 170. Capacities of the machine range from 2,250 ft for EX drilling to 500 ft with 6-in. by 7¾-in. core barrel. — Sprague & Henwood, Inc., Scranton 2, Pa.

Circle 375 on Reader Service Card

CRANE - EXCAVATOR — The Koehring 605 crane-excavator, rated as a 1½-yd shovel and 36-ton crane, is detailed in a bulletin. — Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis.

Circle 376 on Reader Service Card

For 50 years Richmond has applied its hard earned know-how and experience to developing the most expanded and versatile line of engineered tying devices, anchorages, inserts and accessories for concrete construction. Richmond's complete line of dependable, laboratory tested form-tys, hardware, building products and accessories for light concrete construction provide you with a reliable, single source which will save you time and money safely.

Shown here are some of Richmond's typical items for concrete building work. For complete information about the full line send for FREE literature ... and, if you have any specific concreting problem let our Technical Department help you. Write to:

1911-1961 50 YEARS OF PROGRESS

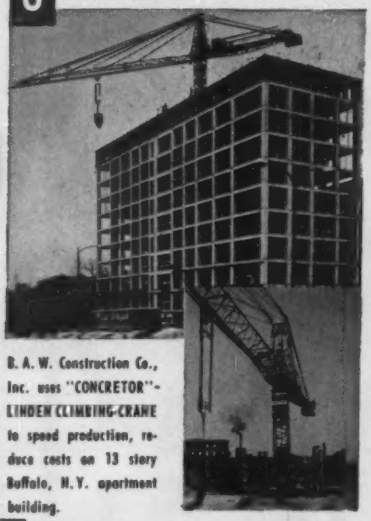
Richmond SCREW ANCHOR CO., INC.

INSIST ON RICHMOND ... AND BE SURE IT'S RICHMOND

MAIN OFFICE: 816-838 LIBERTY AVE., BROOKLYN 8, N. Y. SALES OFFICES, PLANTS & WAREHOUSES: FT. WORTH, TEX. ATLANTA, GA. • LAUREL, MD. • ST. JOSEPH, MO. • WALTHAM, MASS. IN CANADA: ACROW-RICHMOND, ORANGEVILLE, ONT.

Circle 181 on Reader Service Card

"CONCRETOR"–LINDEN CLIMBING-CRANES BRING COSTS DOWN 6 WAYS!



B. A. W. Construction Co., Inc. uses "CONCRETOR"-LINDEN CLIMBING-CRANE to speed production, reduce costs on 13 story Buffalo, N.Y. apartment building.

1 Speeds production—"Concretor"-Linden Climbing-Crane goes up with the building while work is in progress... 2-3 floors at a time... the sky's the limit! Raises itself by new patented hydraulic climbing system, with push-button operation. No climbing ropes or pulley blocks.

2 Eliminates rehandling of materials over unnecessary ramps and runways. Unequalled where space is limited because "Concretor"-Linden Climbing-Cranes work from the top. No street access necessary.

3 Places loads where they're wanted! 100' jib rotates in full circle, up to 100' radius. Crane slews, hoists, luffs simultaneously.

4 Remote-controlled by 1 man from working deck. Noiseless—Electrical operation... eliminates hazards.

5 Pays for itself in 2 years with ordinary use. Eliminates costly diesel fuel. Almost maintenance-free. Costs about half what you'd expect to pay for earth-bound cranes of similar capacity.

6 Successfully used for demolition—stays on top. Set in a 4' 3" square well in the building—comes down with the job.

Recommended for all types of industrial, apartment and office buildings, silos, water towers, bridges, viaducts, etc.

RENTAL/PURCHASE PLANS. Delivered anywhere in U. S. Factory-trained service engineers available.

For literature address Dept: CM-9

B. M. HEEDE, INC.

30-01 37th Avenue, Long Island City 1, N.Y.

B. M. HEEDE CALIFORNIA, INC.

951 North Linden Ave., South San Francisco, Cal.

Circle 182 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

TRUCK CRANE—Link-Belt's 20-ton HC-68A truck crane is depicted in a 20-p. catalog, No. 2843. A special section is devoted to the carrier. Other sections cover Speed-o-Matic power hydraulic controls, the various front-end attachments, and safety features.—Link-Belt Speeder Corp., 1201 Sixth St., S.W., Cedar Rapids, Iowa.

Circle 368 on Reader Service Card

ROAD WIDENER—A 12-p. bulletin illustrates the Model SJ-50 road widener and shoulder paver. The machine features hydraulic controls, fine grade control, fifth wheel trainer, hydraulic steering, self-cleaning hopper, and oscillating push rollers.—Barber-Greene Co., Aurora, Ill.

Circle 369 on Reader Service Card

CRANE IMPROVEMENTS — A B-E bulletin lists 56 improvements on the Model 88-B Series Two crane-excavator. Notable changes have been made on the machine's revolving frame, deck machinery, power units, air controls, crawlers, and shovel, crane, clamshell, and dragline front ends. As a shovel, the machine is equipped with 5-yd dippers; as a dragline, from 4 to 7-yd buckets, and as a clamshell, from 4 to 6-yd buckets.—Bucyrus-Erie Co., S. Milwaukee, Wis.

Circle 370 on Reader Service Card

FLOAT ATTACHMENT — The SW-150 float attachment, push-button controlled, is illustrated in Bulletin FF-100. In operation the SW-150 float is attached to and towed by the B-K SW-100 finisher. The attachment features a telescopic frame that widens automatically from 12 to 28 ft, a suspended-type oscillating screed unit for measuring concrete, and a pan-type float. — Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.

Circle 371 on Reader Service Card

BOOM UNLOADERS—Bulletin B-1-61, 8 p., presents specs of five Side-O-Matic boom unloaders for concrete block and other building materials. — Side-O-Matic Unloader Corp., York, Pa.

Circle 372 on Reader Service Card

NF

name's

NEENAH

and the products are GRAY and DUCTILE IRON CONSTRUCTION CASTINGS of finest QUALITY FINISH UNIFORMITY

See for yourself—

stop by

BOOTH B65

at the APWA Congress and Equipment Show

Name's Neenah... if we make it it's a casting... and the best.

New 168-page catalog shows our line. It's sent promptly when requested.

NEENAH FOUNDRY COMPANY

NEENAH • WISCONSIN

Chicago Office

5445 North Neva Ave., Chicago 31, Ill.

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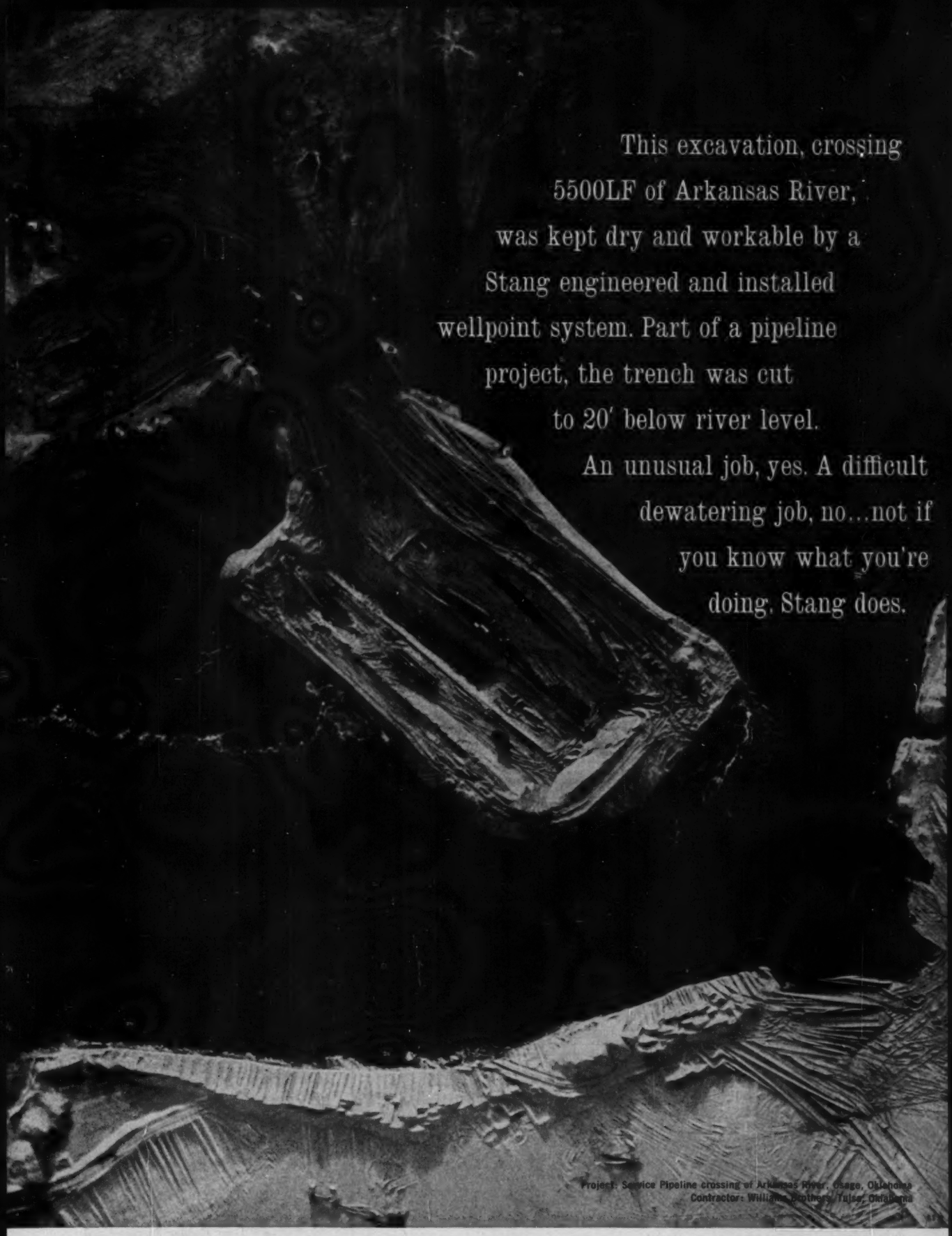

This excavation, crossing
5500LF of Arkansas River,
was kept dry and workable by a
Stang engineered and installed
wellpoint system. Part of a pipeline
project, the trench was cut
to 20′ below river level.
An unusual job, yes. A difficult
dewatering job, no...not if
you know what you're
doing. Stang does.

Project: Service Pipeline crossing of Arkansas River, Osage, Oklahoma
Contractor: Williams Brothers, Tulsa, Oklahoma

JOHN W. **STANG** CORPORATION • 8221 Atlantic Avenue • Bell, California • Tacoma • Minneapolis • Omaha • Tulsa • Mobile • St. Petersburg

Write for the new Stang General Catalog

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems • Dewatering Planning • Equipment • Service

Circle **183** *on Reader Service Card*

A DAY'S WORK EVERY HOUR

"3500" Jenny® slashes through caked mud, grease, grime

Customers tell us that the toughest cleaning job is no match for the powerful "3500" Hypressure Jenny. It's ready for instant use . . . compact, easy for one man to move around, simple to operate, and completely dependable. Shop after shop and contractor after contractor have proved that cleaning time for heavy equipment can be drastically cut with a "3500" Jenny.

The "3500" Jenny is a job-powered, all-purpose cleaner—delivering up to 250 gallons per hour as a steam cleaner and up to 360 gallons per hour as a hydraulic cleaner. Single-lever control offers the operator instant choice of eleven different hot or cold cleaning ranges at temperatures up to 325°F.

Prove the "3500" on your own equipment. And if your workload requires more than one unit, make your choice from the full line of Jenny steam cleaners and washers priced as low as $325. Mail coupon for details.

hv

HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division, Coraopolis, Pa.

In Canada: Hypressure Jenny Sales & Service, Ltd.,
517 Jarvis St., Toronto 5, Ont., (C.S.A. Approved)

Please send me information on: (check one or both)
☐ "3500" Jenny ☐ Other Jenny Models and Multi-Job Washer

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

104

Circle 184 *on Reader Service Card*

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to August 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

COIL TIES—Superior's coil tie system of concrete forming is described in Bulletin CTS-1.—Superior Concrete Accessories, Inc.
Circle 373 *on Reader Service Card*

GAS ENGINE—The V-640D gasoline engine with 60 hp is the subject of Bulletin S-282. The engine weighs 521 lb.—Motor Corp.
Circle 374 *on Reader Service Card*

FRICTION MATERIALS — Selection guide lists performances, dimensions, and tolerance of various friction materials. — Johns-Manville.
Circle 375 *on Reader Service Card*

CONVEYOR BELTS—Ray-Man conveyor belts for speeds of over 1,000 fpm are the subject of a bulletin. — Raybestos-Manhattan, Inc.
Circle 376 *on Reader Service Card*

SCAFFOLDING — Catalog A tells where to get Patent's line of scaffolding and shoring equipment.—Patent Scaffolding Co.
Circle 377 *on Reader Service Card*

PIPE LINE — Transit pipe for sewers, water mains, drainage, and conduit lines is covered in a bulletin.—Johns-Manville.
Circle 378 *on Reader Service Card*

CABLEWAYS—Sauerman Slackline Cableway for excavating spans up to 1,000 ft is the subject of Catalog C.—Sauerman Bros., Inc.
Circle 379 *on Reader Service Card*

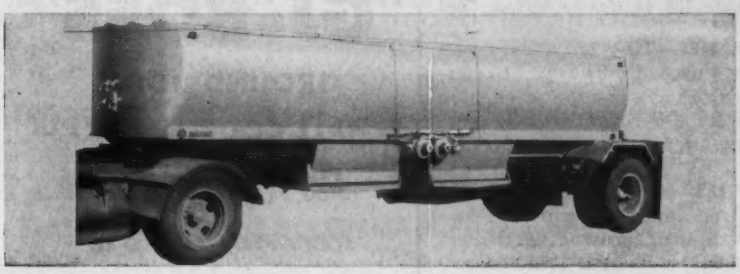
CLEANER—The 3500 Jenny, which cleans with either steam or hydraulically, is described in literature. — Homestead Valve Mfg. Co.
Circle 380 *on Reader Service Card*

WIRE ROPE—A booklet lists the diameter, construction, lay, and grade of wire rope for 50 jobs.—Hazard Wire Rope. Div.
Circle 381 *on Reader Service Card*

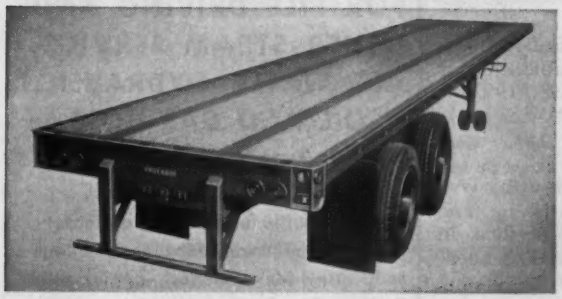
continued on page 186

Fruehauf Construction Trailers Are BIG MONEY MAKERS!

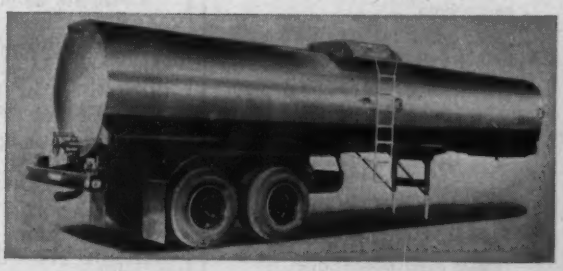
HOIST-TYPE DUMPS—wide range of designs in steel or frameless aluminum with weight savings up to 3,500 pounds. Single or tandem axle. Single or twin front-mounted or under-mounted telescopic hoists. Available with sand and gravel or rugged rock bodies. Toughest units on the market!



FRUEHAUF BOTTOM HOPPER DUMPS are rugged rough-terrain units. They are excellent for hauling sand, gravel or aggregates. Frameless high-tensile steel body. Tandem models with 14 to 30 cubic yard payloads for high-profit, lower-cost hauling.



PLATFORM TRAILERS—designed for years of rugged service. Fruehauf Platforms range from brawny 50,000-pound capacity Workhorse units to lighter-weight multi-purpose units. Lengths from 21½ feet for single axle units to 42 feet for tandems.



HIGH-TEMPERATURE INSULATED TANKS—engineered to haul bigger payloads of asphalt, road oil, or similar products. Tank capacities range up to 9,000 gallons. Available in steel or weight-saving aluminum. Safely transports liquids with temperature requirements ranging from 150° to 450° F.

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"
—The Key to Transportation Savings

FRUEHAUF TRAILER COMPANY
10949 HARPER AVENUE • DETROIT 32, MICHIGAN

Please send me Fruehauf's complete line folder for 1961.

Name _____ (please print)

Company _____

Address _____

City _____ State _____

Circle 185 on Reader Service Card

Gates

POLY-CONE

CAM-LOCK

FORM TIES

U. S. AND CANADIAN PAT. PENDING

THE HIGHEST % OF BREAKBACK EVER!

- A full 1" breakback *every time*
- Flexible cone allows for oversized plywood and 2x4's
- High density polyethylene cone-washer cannot stick to concrete
- A smooth, easy-to-grout hole results after breakback allowing faster and better finishing
- Ideal for all Cam-Lock and Wedge-Lock forming jobs.

WEDGE-LOCK BRACKET

See your local Gates dealer or write for complete details on Cam-Lock and other Gates Systems.

DEALER INQUIRIES INVITED

GATES & SONS, Inc.

80 S. Galapago • Denver 23, Colo.

Circle 186 on Reader Service Card

AD LITERATURE . . .

Listed below is free material offered in this issue's advertisements received up to August 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

PORTABLE SERVICE — A booklet describes portable service stations for equipment in the field. —Alemite Div., Stewart-Warner Corp.

Circle 382 on Reader Service Card

COMPACTION—The Barco Rammer for compacting soil in restricted working area is covered by Catalog 621.—Barco Mfg. Co.

Circle 383 on Reader Service Card

FORMING ACCESSORIES—Dayton's full line of concrete forming accessories is described in a catalog.—Dayton Sure-Grip & Shore Co.

Circle 384 on Reader Service Card

ROPE TIPS—Tips on abuses and correct uses of wire rope are contained in a handbook.—Union Wire Rope, Armco Steel Corp.

Circle 385 on Reader Service Card

TRAILERS—An illustrated folder pictures and describes Fruehauf's line of construction trailers for 1961.—Fruehauf Trailer Co.

Circle 386 on Reader Service Card

POST SHORING—The Safload post shore, in one adjustable size, is the subject of Bulletin 199A.—Safway Steel Products, Inc.

Circle 387 on Reader Service Card

CRUSHING PLANT—Telsmith's Gyrasphere portable crushing and screening plant is described in Bulletin 276.—Smith Engineering Works.

Circle 388 on Reader Service Card

ROTARY DRILLING—The LRD-2, for drilling holes up to 4½-in-dia. as deep as 30 ft, is covered in Spec Sheet AT-146.—Le Roi Div.

Circle 389 on Reader Service Card

PAVING PLANT—A bulletin describes Butler's mixing plant for concrete paving or other construction.—Butler Bin Co.

Circle 390 on Reader Service Card

STEEL FORMS—The 400 Form-Crete catalog describes steel forms and their application in various jobs.—Form-Crete

Circle 391 on Reader Service Card

Sign of DIXON BOSS *Quality*
For Nearly Half a Century

"GJ-BOSS"

GROUND JOINT

FEMALE COUPLING, X-34

Its Reputation Recommends it

FOR PILE DRIVING AND OTHER STEAM SERVICE; AIR, WATER, HYDRAULIC, OIL AND GAS HOSE

High or Low Pressure

Always reliable for durability and safety. Ground joint union between stem and spud provides *washerless*, permanently leakproof seal. All parts steel or malleable iron, rust-proofed. Furnished with super-strong "Boss" Offset Interlocking Clamps. Sizes ¼" to 6", inclusive.

Washer Type Coupling—"Boss" W-16.

Companion Male Coupling—"Boss" MX-16.

Stocked by Distributors and Manufacturers of Industrial Rubber Products

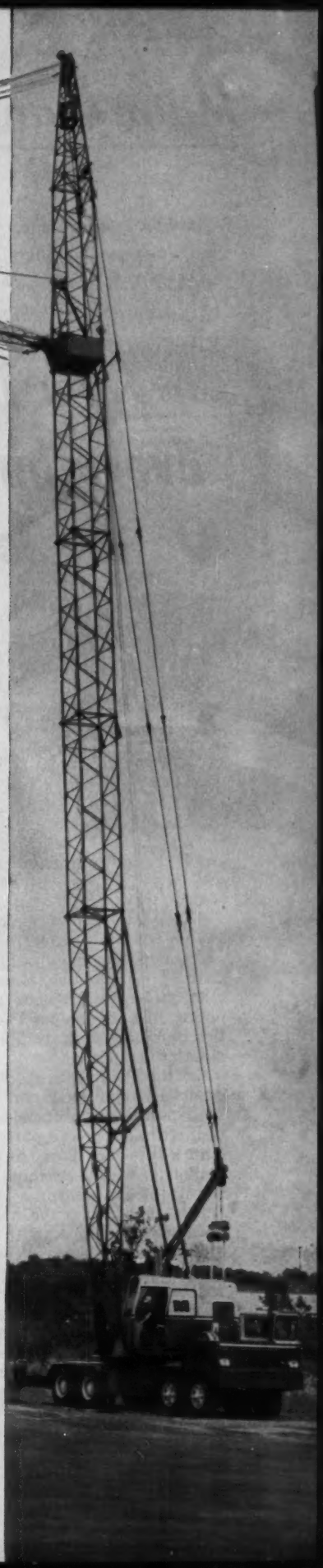
DIXON
Valve & Coupling Co.

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies
Buck Iron Company, Inc. Quarryville, Pa. · Precision Drawn Steel Company, Camden, N. J.

Circle 259 on Reader Service Card

Another MARION First!

NEW AND EXCLUSIVE MARION MOBILTOWER CRANE



Multiplies the job-usefulness of a Marion truck or crawler crane; Gives You TWO basic machines in one.

FAST CONVERTIBILITY from drag, clam or pile driving to tower crane service. Same main boom and jib components used for conventional and tower crane service.

REAL TOWER CRANE PERFORMANCE — Handles 5,000-lb. loads at radius of 60 feet and heights of 107 to 150 feet (depending on jib boom angle). Progressively bigger loads at radii down to 20 feet.

MAIN BOOM ADDS EXTRA REACH — Main boom angle can be lowered from near-vertical to any lower angle within rated capacities of machine and boom. Main boom and jib angle instantly controllable.

FREEDOM TO MOVE on truck mount or crawlers. No rails, no in-line limitation to work area.

FAST, FAST, FAST — Sets up or converts quickly on the job. Machine lifts boom and jib from horizontal without any anchor rigging. All conversion components pin-connected. Boom lowers or raises in four minutes — no need to take chances with storms. No electric power problems.

SMOOTH, SMOOTH POWER — Power load lowering on BOTH hoist line and jib control line.

STRENGTH — Tubular T-1 steel boom with tubular lacing includes base and point sections that lift full rated capacity of machine.

WHEEL-MOUNTED OUTRIGGERS for fast in-line machine move-ups. Raising only front wheels of outrigger beams (manual or hydraulic) permits steering.

FOR MORE INFORMATION, phone DUpont 2-1151, Marion, Ohio, see your Marion Distributor or wire or write

MARION POWER SHOVEL COMPANY • Marion, Ohio
A Division of Universal Marion Corporation

Circle 187 on Reader Service Card

A mobile machine shop and three parts trailers back up a fully-equipped field maintenance shop.

They Do Everything On the Job

IN THE YARD—Contractor disassembles scraper components in the yard with a small truck crane, takes units into shop for repair. Rig is cleaned, painted in yard.

"WE'LL DO ANYTHING to keep our equipment working" says Michigan contractor Otto Solomon, and he backs up the statement by putting maintenance on a self-sufficient basis on each of his firm's jobs.

Right now, S. D. Solomon & Son has more than 60 rigs, including scrapers, tractors, graders, cranes, and trucks, working on a 12½-mi stretch of Interstate 75 near Pontiac, Mich. On this job, and on all other Solomon projects, an experienced maintenance crew is equipped to handle anything from tire inflation to a complete engine over-haul—right at the job.

On the Pontiac road job, Solomon has five big, especially equipped maintenance trailers and a semi-permanent prefabricated shop building. Three of the trailers hold a parts stock valued at $60,000. And if a needed part can't be found in one of the trailers, a mobile machine shop is capable of turning it out and getting a rig back on the job. The trailer that houses the machine shop also holds a workbench equipped with tools for troubleshooting and repairing electrical components

The field shop itself is a prefab steel Butler building that Solomon modified for quick erection and disassembly. They ganged the standard 1½x8-ft steel roof panels by bolting them to 8x20-ft wood frames made of 2x4's. Just 12 of these preassembled sections make up the roof of the building. Each section is fitted with lifting hooks to speed erection.

The 40x60-ft shop building was erected atop a 4-in-thick concrete floor slab by a six-man crew in just 6 hr. Before modification it took the same crew about 36 hr to erect the building.

Solomon leaves the side panels off the building in the summer. The open sides provide easy access and more light, and make the shop cooler for mechanics. In winter, the crew closes the sides by tacking rolls of plastic film to wood lathe framing. A gun-type oil furnace rated at 360,000 btu provides plenty of heat.

The shop building is well equipped with the tools of maintenance. Major items include a 280-gph Clayton steam cleaner, a 90-ton Hein-Werner stationary hydraulic press, a 6-ton Kent-Moore hydraulic engine stand and a heavy-duty Thor bench grinder. A 60-cfm Gardner-Denver compressor supplies air for impact wrenches and paint spray rigs.

The contractor not only overhauls engines but also repairs everything from transmissions to differentials in the field. Solomon finds they can do much of this work in half the time it would take at a distributor's shop. Availability of equipment—a major asset in modern high-production earthmoving—is Solomon's goal.

The shop building will hold four big rigs at a time, but the crew ordinarily disassembles units in the yard and brings the components inside. The portable engine stand makes it easy to move an engine from the yard to the shop. Master mechanic Sonny France calls it "the best piece of shop equipment I've got." The head of the stand can be tilted and rotated hydraulically to hold an engine in the most convenient position.

The framework of the shop is not heavy enough to support an overhead crane, so the crew handles

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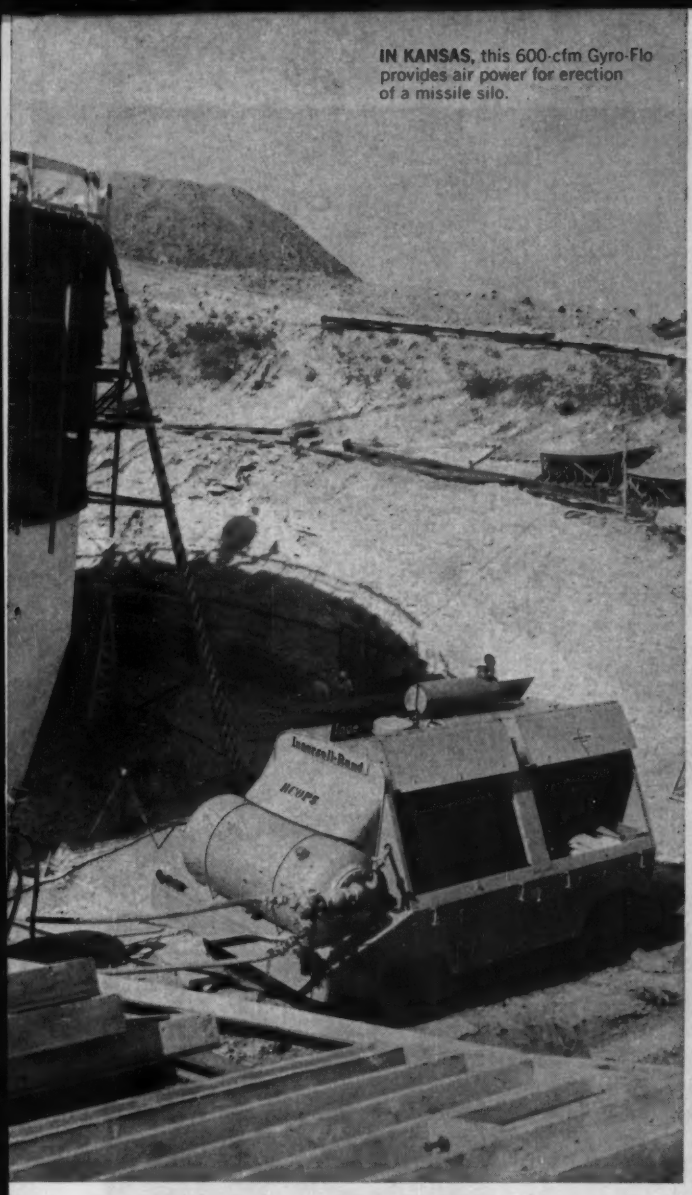


IN KANSAS, this 600-cfm Gyro-Flo provides air power for erection of a missile silo.

IN TEXAS, three Gyro-Flo 600s power Crawl-IR drills for a missile launching site.

IN NEW YORK, three 600-cfm Gyro-Flo compressors help break ground for a missile pit.

Why missile-base contractors

DEPEND ON GYRO-FLO

The answer is simple. They know Gyro-Flo portable compressors are dependable... give top performance and sustained fuel economy with practically no attention or maintenance.

Where schedules MUST be met, there's no substitute for Gyro-Flo...the first and most experienced portable rotary air compressor, pioneered and perfected by Ingersoll-Rand.

Available in sizes from 85 to 900 cfm, Gyro-Flo compressors provide a constant source of 100 psi air month after month, even under the most adverse conditions of heat or cold. Like cost-conscious contractors everywhere, you too can *depend on Gyro-Flo.*

The World's Most Comprehensive Compressor Experience

Ingersoll-Rand 11 Broadway, New York 4, N. Y.

GYRO-FLO

Circle 189 *on Reader Service Card*

RAY-MAN CONVEYOR BELTS On Giant Wheel Excavators

Move Overburden More Than 400 Feet ...At 5100 Tons Per Hour!

High-speed belt conveyors, with huge carrying capacities, are an integral part of this new 1,600 ton wheel excavator built for Peabody Coal Company at Bucyrus-Erie Company. High conveyor speeds—over 1,000 FPM—and high impact, put a tremendous strain on belt and belt splice. Ordinary belts can't take it. Ray-Man Conveyor Belting met the production standards of Peabody's giant earthmover—to handle *full* loads of overburden at *full* speeds *without* costly downtime for splice repairs!

Ray-Man belts on other machines of this type have hauled over 12,000,000 tons—outperforming all competitive belts. Splices last twice as long because double ply compensation relieves outer ply stress at bends. Ray-Man trains naturally, resists impact and ripping, requires no breaker ply. Exclusive XDC cover prolongs belt life. Let an R/M distributor show you how an R/M Conveyor Belt can outperform other belts on *your* conveyors. Write for Bulletin M302 and Catalog 25CB.

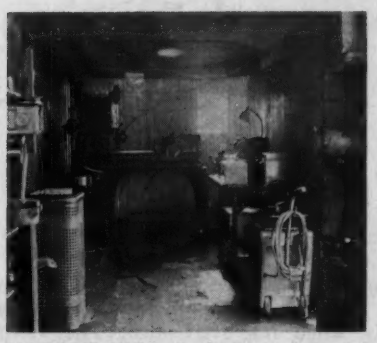
OVER 900 FT. OF 54" RAY-MAN CONVEYOR BELT are required for digging ladder and stacker conveyors on this huge Bucyrus-Erie Wheel Excavator. Machine will help increase output a million tons annually at Peabody Coal Company's River King Mine near Freeburg, Illinois.

RM 137

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION • PASSAIC, N. J.
ENGINEERED RUBBER PRODUCTS

Circle 190 on Reader Service Card

MODIFIED BUILDING — Contractor gangs roof panels for erection, leaves sides open.



MACHINE SHOP—Trailer houses lathe that turns out sleeves, bushings and other parts.

lifts with one of three mobile cranes. A Gar Wood swing crane mounted on a Federal 6x6 truck takes care of heavy lifts. For lighter work either an International K9 or a Bucyrus-Erie H3 Hydro-Crane does the lifting. All three cranes fit inside the shop building.

Five Freuhauf trailers complete Solomon's field maintenance setup. Two of the trailers measure 32 ft in length and the other three are 27 ft long. Three of the trailers hold parts for the 60-odd rigs on the job. In each parts trailer, 120 partitioned cubicles contain parts for engines, tracks, transmissions, turbochargers, injector pumps and governors.

Equipment on the job includes 26 Caterpillar DW21 scrapers, six Cat D9's, five D8's, a D6, two Michigan 380's, a Michigan 280, five Cat graders, four Austin-Western graders, four cranes and two air compressors.

The fourth trailer is used primarily for storing tires, pumps, and hoses. The fifth trailer houses the machine shop, which is equipped with more than $5,000 worth of tools. A 12-in. Atlas lathe turns out bushings, shafts, sleeves and other parts that are not readily available. Other shop equipment includes a 20-in. Cincinnati drill press, a Sioux valve grinding machine, a Kwikway boring bar, a Dake hand press, and a Thor grinder.

The electrical work bench in this trailer is equipped with a Niehoff T-12 growler for trouble-shooting. Other electrical equipment in the shop includes a Sun voltage regulator and generator tester, a Sun starter tester, and a portable Mar-

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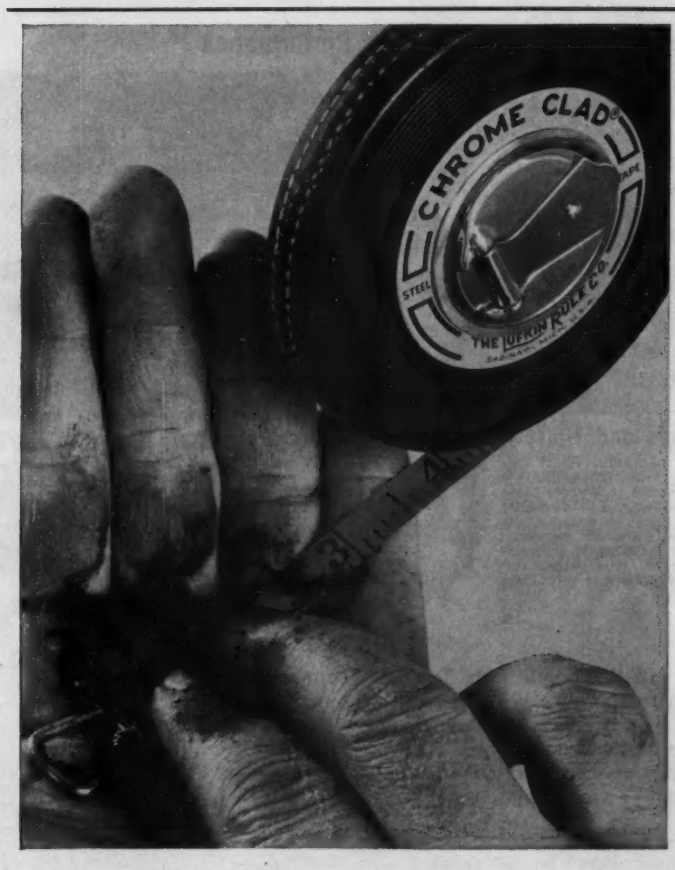

Gritty mud would mar the markings on most tapes!

This Chrome Clad® tape is Lufkin's 50-foot ANCHOR model. It *looks* quality in its hand-sewn leather case . . . it *is* quality.

A special kind of electroplating protects the tape from the damage of mud, sand and grit. The bold black markings are bonded to the steel base . . . protected by layer after layer of electroplating . . . topped by a final coat of tough chromium. Glare free, corrosion resistant, longer lasting—this is the tape preferred by every professional. Available with markings in feet, tenths and hundredths.

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Union Wire Rope

In Union, There Is Quality That Responds

Overloaded—Soon Exploded

The rated capacity of a wire rope is based on the breaking strength (catalog) divided by a safety factor applicable to the type of service or use. The grade of steel, type of construction and size of the rope determine tenaile strength. It must be properly related to the loads it will carry, or costly and dangerous early failures are likely to occur.

Strangled by a Misfit Sheave

When the groove of a sheave is too small for the rope diameter, pinching action quickly destroys the rope—especially when it's overloaded. The victim shown here was knocked out in just 1½ hours of service.

UNION Wire Rope Tuffys—Famed For Tough Job Performance

Tuffy Scraper Rope

Flexible enough to take sharp bends; stiff enough to resist looping and kinking when slack; highly resistant to the shock of load impact—that's Tuffy balanced construction. Mount a reel on your scraper—save wasting sound rope.

Tuffy Slings and Hoist Lines

Slings are a patented, 9-part machine-braided wire fabric that is next to impossible to knot or kink. Hoist lines have built-in strength, toughness, flexibility. Balanced—a top-performing team for handling every type of material. In addition to Tuffy, Union Wire Rope furnishes a complete line of slings.

Tuffy Dozer Rope

Mounts right on your dozer in a 150′ reel. When rope shows wear, just feed through enough to replace the damaged part. Saves rope, gives you a bonus of extra service. Also available in 300′ and 500′ reels.

Union Knows the Ropes—Comes Up With Solutions To Wire Rope Problems And we have 'em—more than 1600 standard constructions. Add to that the famous Tuffy family of special ropes and slings, custom-made for special needs and special uses. If none of these fit your needs, our research laboratory engineers and field staff are at your service. They'll build you just the rope or sling you need—with Union toughness and Union quality all the way. Ask your Union distributor—listed in the phone book Yellow Pages.

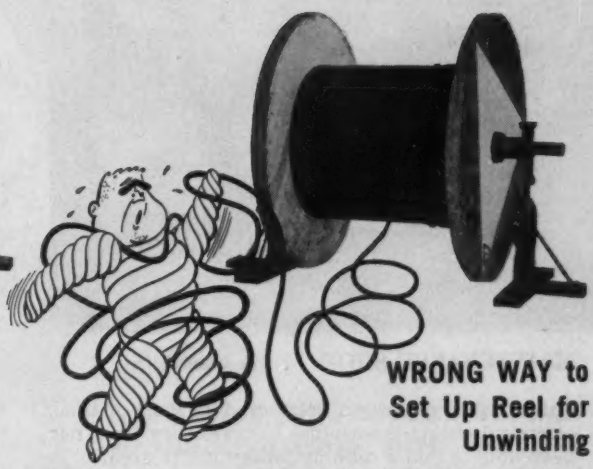
Tuffy Tips

Profitably To Proper Use

RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture (above), unwinding has started and the reel is turning faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops or kinks.



WRONG WAY to Set Up Reel for Unwinding

The rope is coming from the top of the reel and forming loops as it overruns. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.

Tuffy Dragline Rope

High abrasive resistance and super flexibility. Gives long service, dependable action in handling any material—wet or dry dirt, sand, gravel, rock, minerals. Rides smoothly on grooves—hugs the drum when casting for full load.

Union Wire Rope Handbook of TUFFY TIPS...Free!

The "Tuffy Tips" shown here are quoted right out of Union's handbook. In it there are dozens of other priceless hints on the correct use of wire rope. The common abuses and how to avoid them. How to save costly injuries. Maintenance tips. The proper fittings and how to apply them. Recommended sizes. Many other facts and suggestions that will cut down your rope costs and help you get out of wire rope the full service we build into it. No charge. Write Union Wire Rope, Armco Steel Corporation, 2270 Manchester Ave., Kansas City 26, Missouri.

3-61

ARMCO Union Wire Rope

Circle 193 on Reader Service Card

ELECTRICAL BENCH—Workman tests starter at trouble-shooting workbench.

MAINTENANCE SHOP . . . *continued*

quette battery charger. Solomon does most of their electrical repair themselves because they have not been able to find a reliable jobber in the area.

Instead of stocking replacements for electrical components such as starters and generators, Solomon saves storage space by keeping on hand only those parts that are likely to burn out.

"Even though housings and brackets and so forth are different on many machines, the electrical guts of the components are usually the same," Solomon explains. "It's much simpler and cheaper to carry parts. If a machine burns out a starter, we can pull it and repair it almost as fast as we could put a replacement in."

For on-the-spot repairs, Solomon has a fleet of ten Ford and Chevy 1-ton pickups on the job. Two of these service trucks carry 200-amp Lincoln welders. Solomon also uses a 300-amp Hobart trailer-mounted welder that can be towed by a truck.

Two shop-built lube trucks service equipment on the job. One is a Ford F600 equipped with a 12-reel Alemite lube setup powered by a Quincy compressor. The other is a 1-ton, four-wheel-drive Dodge truck equipped with six reels. In winter, the insulated van of each lube truck is heated electrically with current from a 110-v Farney generator that is piggy-backed on the 12-v generator of the truck.

The field shop on this job is in most respects self-sufficient, but when an emergency arises Solomon wastes no time bringing in help. If it is not feasible to make a needed part on the job, Solomon flies it in from the home shop at Lansing in a Beechcraft Bonanza. Just as Solomon says, they'll do anything for equipment availability.

HEY! YOUR SLIP IS SHOWING!

And *your* slip is showing, too, when your crawler tracks start spinning.

But you can restore full pulling power to your worn grousers in less than 30 minutes in the field with MARQUETTE's Tractor Strip "retread."

And you can save 30% or more – up to $400 – of the cost of a new set of grousers by using easy-to-weld Tractor Strip. Often, it lasts longer than original grouser bars! Sizes available to fit *all* tracks.

Write MARQUETTE today for the name of your nearest dealer who handles Tractor Strip and the full line of MARQUETTE welders, welding accessories and battery charger-tester equipment.

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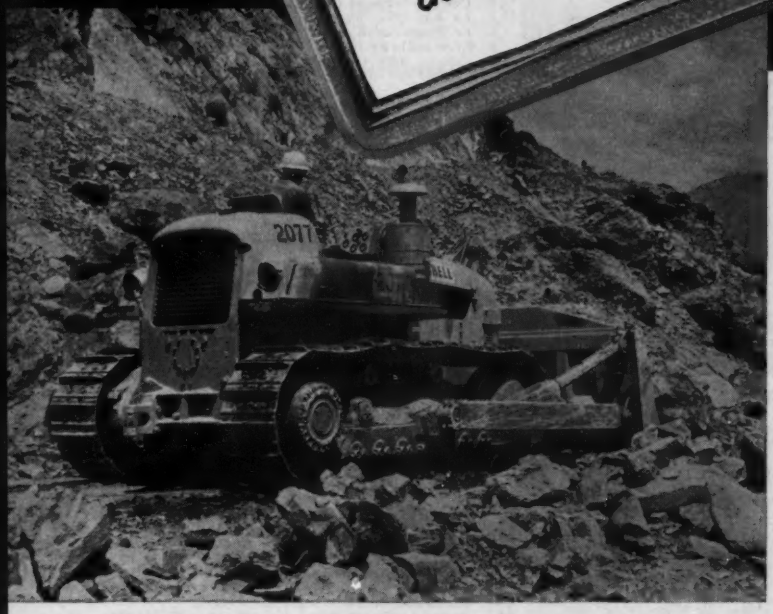
Circle 195 on Reader Service Card ➤



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C-6		Crawler "C"	
Planetary Gears	3 hours	Gears and Bearings	16 hours
Inside pinion and drive gear reduction	11 hours	Top pinion from steering clutch with bearing and shaft	13 hours
Total	14 hours	Total	29 hours

Times shown are for removal and replacement of final drive with all components in place.

With a 15 hour saving for final drive replacement the "Euc" C-6 gives you 15 hours more productive time on the job! Easy accessibility that's designed into the C-6 and Euclid's time-tested planetary drive save hours of repair labor . . . that means less downtime and more production. Compare these savings in terms of lower costs . . . add the extra hours available for work on the job . . . then you'll see what just this one advantage can do in cutting operating cost.

The Euclid dealer in your area would like to prove that the C-6 is the lowest cost tractor in the 200 h.p. class . . . and the most versatile by far. He's sure of it, and wants you to know the facts, too!

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EUCLID

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Methods Memo . . .

A Volcano Built to Order

An erupting volcano built by Armco's Construction Dept. steals the show in a new movie, "The Devil At 4 O'Clock," scheduled to be released this month by Columbia Pictures Corp. The synthetic belcher costs $500,000.

Armco's crew set a 20-ft-long, 216-in.-dia Multi-Plate pipe on top of a hill to form the chimney of the volcano. Then the crew attached a 65-ft-long, 72-in.-dia access pipe to the bottom of the chimney. They covered the pipes with earth, cork and plastic to complete the job.

Black powder bombs and gasoline placed in the chimney simulated the explosion. For lava, 15,000 gal of peel-paste was mixed with fluorescent paint and sprinkled with blackcork. For lava ash, a helicopter dumped shredded gray plastic over the volcano.

The volcano took six months to build. It was blown to bits in 22 seconds.

Reward: $15,000

That's the sum awaiting the person who exposes the party or parties guilty of sabotaging the Jensen Construction Co of Des Moines, Iowa.

Three years ago, a Jensen crane was dynamited on a Nebraska highway job. A month later, the home office building was bombed. Recently, another crane was blown up. The contractor estimates his total loss is in excess of $75,000.

What's behind the bombings? No one knows for sure, but the Jensen firm is not union organized. At any rate, the AGC of Iowa, the Master Builders of Iowa, and the contractor each are offering a $5,000 reward for apprehension and conviction of the saboteurs.

Air Mail, Special Delivery

Michigan contractor Otto Solomon believes in fast service. When a rig breaks down and a part is not immediately available, his firm's Beechcraft Bonanza flies the needed part from the manufacturer's plant to the job.

When a CM&E editor wrote Solomon for more details about his maintenance setup after visiting one of his jobs, Solomon responded in the same way. After picking up the letter at his office one morning, he hopped into his plane to fly from company headquarters to a highway job.

Enroute, at an altitude of 9,500 ft, he wrote CM&E a seven-page reply in answer to the editor's questions. CM&E got the letter the next day and the story went to the printers in time for this issue. It's on p. 188.

A Look Into the Future

An experimental farm tractor under study by International Harvester Co. may be an inkling of things to come in tractors for the heavy construction industry. The research model pairs a gas turbine engine with a hydrostatic transmission.

The 80-hp gas turbine that powers the rig weighs only 90 lb. Hot gases produced from ignition of an air-fuel mixture spin the vaned turbine wheel. The hydrostatic transmission provides infinitely variable speed control. The turbine engine operates a variable displacement pump which energizes the transmission. Oil at high pressure acts on the pistons of a radial hydraulic motor installed in each driving wheel.

To start the machine, the operator merely pushes a button. After that, one control changes forward and reverse speeds and stops the tractor. I-H researchers are working to improve fuel economy and reduce noise to make the model a practical commercial machine.

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R20 A 32-page booklet telling how to achieve better results at less cost when compacting all types of fills and embankments. It shows how to compact various soils most efficiently, what types of machines to use to do the job best and how they should be operated on the fill. Included are a "quick soil-typing guide," a glossary, tables showing what compactors to use under various conditions, and a listing of 49 state highway departments' fill-compaction requirements (densities, lift thicknesses, equipment).

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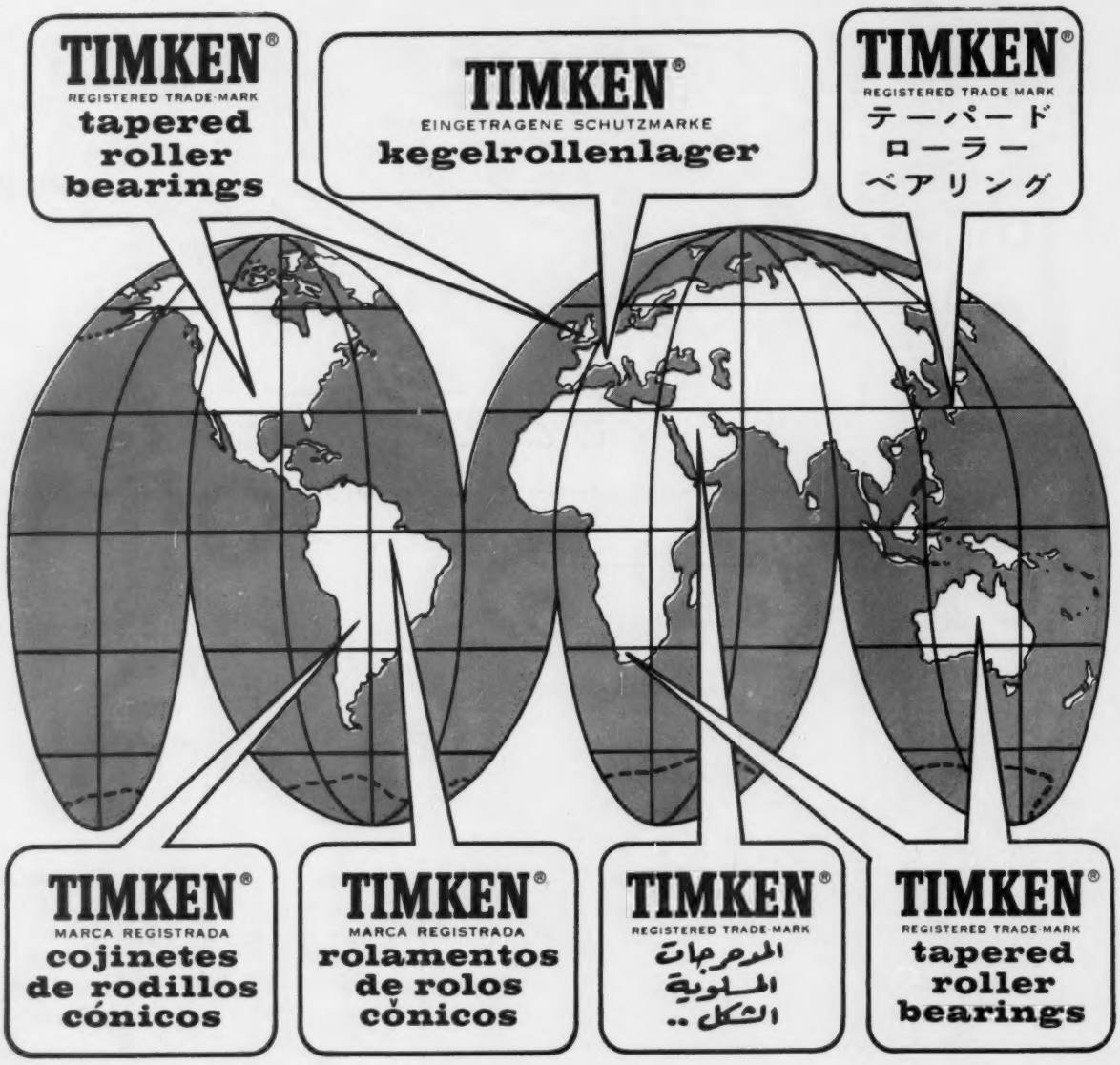

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